Leaning on hardware leasing to reduce capital expenses. PAGE 42 Tech Analysis: XML's dirty little secret. PAGE 55

COMPUTERWORLD

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MAY 27, 2002 ▪ VOL. 36 ▪ NO. 22 ▪ $5 COPY

GEORGIO PALMISANO

From CAMPUS To COMPANY

Forget about eye-popping salaries, whopping signing bonuses and new cars. This year's IT graduates, such as Neal Frager (above), face a much less inviting job market than their predecessors did just a few years ago. Still, there are steps that savvy job hunters can take to find the best entry-level positions.

STORIES BEGIN ON PAGE 26.

ORACLE COURTS SKEPTICAL USERS

Customer criticism persists as vendor moves to improve quality of applications

BY MARC L. SONGINI
TORONTO

APPSUPPORT

Faced with continued user frustration about the complexity of upgrading to its E-Business Suite 11i applications, Oracle Corp. is taking steps to improve the software's quality and make it easier to install. But the company was hit with fresh criticism of its product development and support processes last week, illustrating how far it has to go to win over users.

At the spring conference of the independent Oracle application user group here, company executives detailed new tools and internal operating procedures that the vendor hopes will raise customer satisfaction levels and persuade users to migrate to 11i in greater numbers than they have thus far (see chart, page 63).

That follows the announcement last month of several upgrade assistance programs and an acknowledgment by Oracle CEO Larry Ellison that 11i is hard to install.

Members of the Oracle Applications Users Group who were interviewed last week welcomed Oracle's more cooperative attitude. But there were complaints about the quality of the company's application updates and its technical support, and several users said that they want to see Oracle deliver on its promises over the long haul.

"I'm anxious to see their words become reality. Right now, all we have is words," said Tom Wyatt, president of the Atlanta-based OAUG, which has been working closely with Oracle to remedy the 11i upgrade and support issues.

If Oracle succeeds in getting its application development and technical support teams to work more closely with each other, "that will have a tremendous impact" on users, Wyatt said. He works as director of Oracle systems at Sitel Corp., a customer service outsourcing firm in Baltimore.

Oracle has acknowledged that fewer than 40% of its existing users have installed the 2-year-old 11i applications or are in the process of doing so. While the company has no plans to roll out another major

Oracle, page 63

PRIVACY BILL CARRIES HIGH IT PRICE

Could force companies to provide info access

BY PATRICK THIBODEAU
WASHINGTON

A privacy bill that's pending in Congress could have significant IT ramifications for U.S. companies, since passage of the bill would require them to give customers access to personal information they have collected. For firms without centralized databases of that information, compliance would likely be expensive, critics warn.

Companies such as Marriott International Inc. already have to provide access for their customers in Europe, where such laws are on the books now. If a European resident wants data

Privacy, page 63

INSIDERS SLAM NAVY INTRANET

Managers say project soaks up resources

BY DAN VERTON

It's something that has never before been attempted: the reduction of hundreds of disparate networks across the globe and tens of thousands of legacy applications into a single, integrated and secure intranet architecture. It's change on a massive scale, and it has fueled infighting and charges of mismanagement.

But that hasn't stopped the U.S. Navy and its prime contractor, Plano, Texas-based Electronic Data Systems Corp., from moving forward with the $6.9 billion Navy/Marine Corps Intranet project. Last week, the admiral in charge of the N/MCI program ordered the installation of more than 20,500 outsourced seats by June 30. That order launched the first phase of a 100,000-seat deployment that the Pentagon approved on May 3 based on EDS's success in meeting the requirements of the initial test and evaluation stage [QuickLink: 29642].

Navy, page 16

Admiral's Orders

- Each site must complete deployment when scheduled.
- Delays and work stoppages must be approved by the N/MCI director.
- Security, operations and interoperability goals take precedence over desires of individual units.

SOURCE: REAR ADM. CHARLES MUNNS, N/MCI DIRECTOR, MAY 20, 2002

ONLINE COVERAGE

For background information on Oracle's user relations, read our earlier coverage on the Web.

QuickLinks: 28881, 27257
www.computerworld.com

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“Did you hear
what the
CEO said
yesterday?”

"He said we should

Get your infrastructure ready for anything. You've got relentless hackers, massive usage spikes, 24/7/365 demands, big CEO requests, etc., etc., etc. What is going on here? This, of course, is today's unpredictable business environment. In this environment, where _____ can happen at any moment, you need to keep your infrastructure prepared for anything and everything. And that is exactly what the Microsoft® platform is designed to help you do. Here's how:

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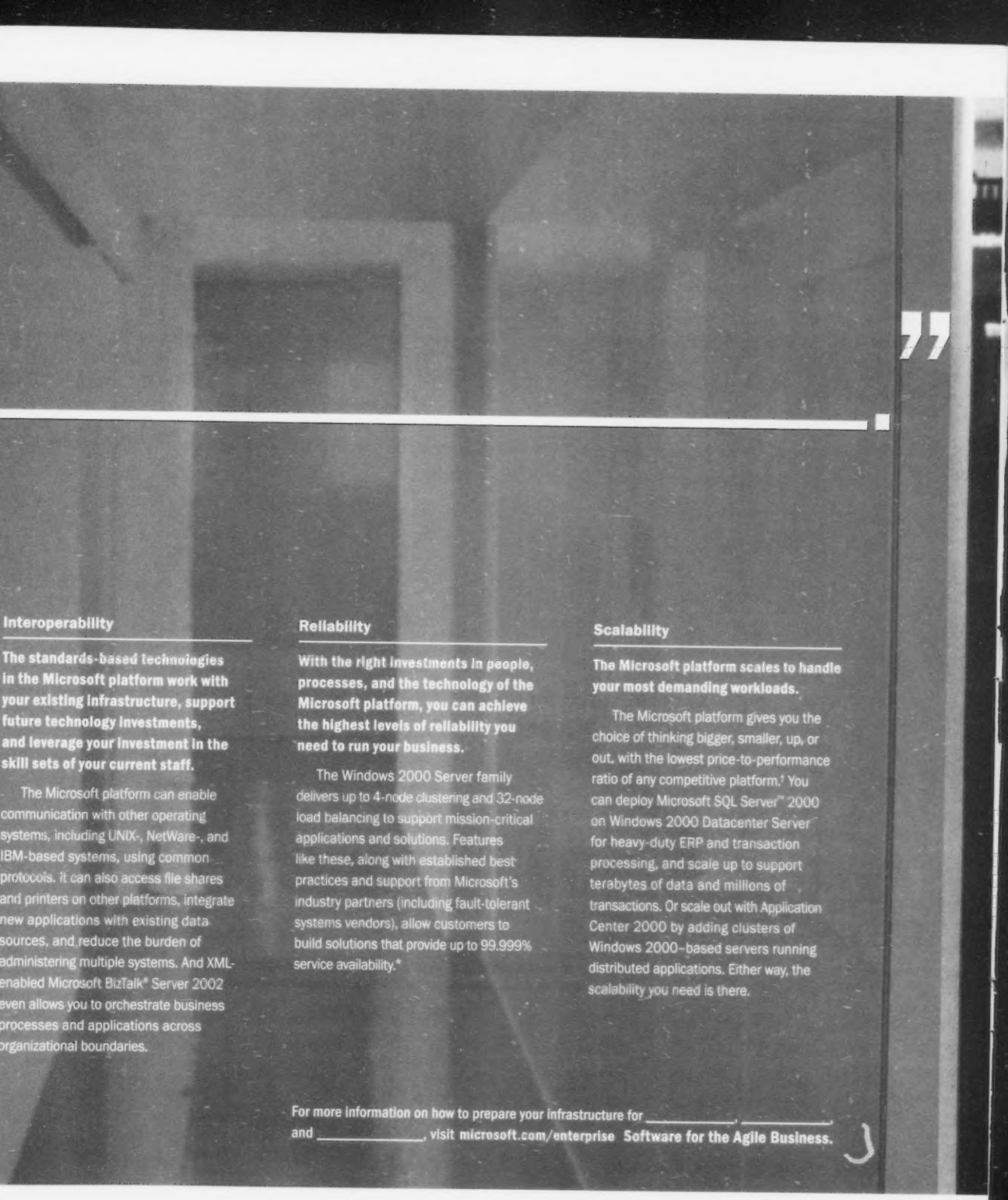
*This level of availability is dependent on many factors outside of the operating system, including other hardware and software technologies, mission-critical operational processes, and professional services. †Source: Transaction Processing Performance Council, May 2002. © 2002 Microsoft Corporation. All rights reserved. Microsoft, Active Directory, BizTalk, and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.



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The Microsoft platform can enable communication with other operating systems, including UNIX-, NetWare-, and IBM-based systems, using common protocols. It can also access file shares and printers on other platforms, integrate new applications with existing data sources, and reduce the burden of administering multiple systems. And XML-enabled Microsoft BizTalk® Server 2002 even allows you to orchestrate business processes and applications across organizational boundaries.

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The Windows 2000 Server family delivers up to 4-node clustering and 32-node load balancing to support mission-critical applications and solutions. Features like these, along with established best practices and support from Microsoft's industry partners (including fault-tolerant systems vendors), allow customers to build solutions that provide up to 99.999% service availability.*

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The Microsoft platform scales to handle your most demanding workloads.

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For more information on how to prepare your infrastructure for _____, _____, and _____, visit microsoft.com/enterprise Software for the Agile Business.

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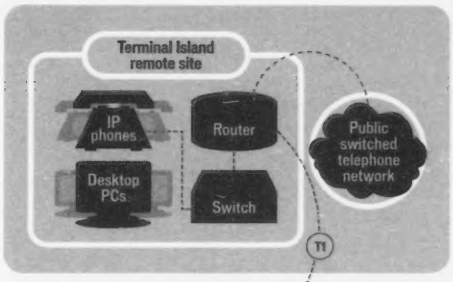
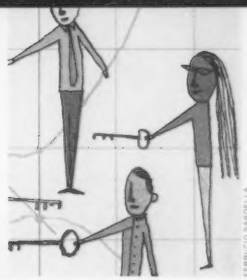


FIELD REPORT: TALKING IN PACKETS

Voice over IP at companies like Embarcadero Systems (illustrated left) promises companies low-cost convergence for voice and data, but many barriers remain. **PAGE 50**



ENCRYPTION FOR EVERYONE

This week's Future Watch focuses on emerging technologies that could make encryption easy enough for common use. **PAGE 56**

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COMPUTERWORLD THIS WEEK

NEWS 4

4 Sears is mum about the sudden departure of CIO Jerry Miller just days after the Lands' End acquisition announcement.

5 In the wake of reports that terrorists may have slipped into the U.S. on cargo ships, New York Port Authority officials say beefed-up IT systems are needed to help stop such breaches.

8 Sun's latest version of Solaris includes more than 300 new features intended to boost the reliability, availability, scalability and performance of the operating system.

12 The Web services options for developers of enterprise integration software continue to grow, as both Tibco Software and Vitria Technology release new tools.

BREAKING NEWS

For breaking news, updated twice daily, visit:
QuickLink: a1510
www.computerworld.com

BUSINESS 25

25 In the debut of a new column called *Peer to Peers*, National Retail Federation Vice President Cathy Hotka offers a list of techniques that IT leaders can use to update themselves on technologies without breaking the bank.

26 Computer science students are duking it out with laid-off veteran technicians and entry-level workers for coveted IT positions.

42 Leasing mainframes and servers can be a lot cheaper than buying them upfront and easier to upgrade, say IT purchasing pros who have benefited from the switch.

43 Chief of information is a new title being tested by dental products maker A-dec, where the CFO reports to the newly appointed information chief.

TECHNOLOGY 49

49 Some IT decisions made recently remind columnist Nicholas Petreley of the popular entertainments of his youth. Remember Planet Bizarro and those body-snatching pod people?

54 QuickStudy: Anti-aliasing smooths out the edges of diagonal and curved lines in computer graphics, eliminating the jagged or stair-stepped look. Learn more in this week's primer.

55 XML's self-describing nature may be its greatest strength as a technology, but it's also a serious security vulnerability, says reviews editor Russell Kay.

57 Security Journal: A test installation of a wireless LAN leaves the entire network exposed at Mathias Thurman's company, leading him to decide on a layered security design.

OPINIONS 22

22 Patricia Keefe writes that even though you're a technology specialist, you'll have to concentrate more on accounting and organization.

22 Pimm Fox says to look beyond the claims of traditional relational database vendors when you want to build the data warehouse that will best suit your company's needs.

23 Michael Gartenberg writes that as more businesses embrace instant messaging, they should be aware of the risks involved.

64 Frank Hayes says a recent *USA Today* report that cited billions of dollars in wasteful IT spending overlooked several important factors.

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ONLINE

IS LINUX TOO HARD?

In our Operating Systems forum, community members discuss Linux and whether it's easy enough for users to have on their desktops.
QuickLink: a2070

ADVICE FROM IT PROFESSIONALS

As this year's college seniors graduate and enter the job market, they probably want to know what kind of jobs and salaries they can expect. Some IT veterans offer their insights to the would-be rookies in our Careers forum.
QuickLink: a2060

CRYPTO CRITIQUE

One of the inventors of public-key cryptography talks with *Computerworld* about problems with encryption today and what the technology will look like in the future. Read the Q&A with Martin Hellman, professor emeritus at Stanford University.
QuickLink: 29732

WHAT'S A QUICKLINK?

On some pages in this issue you'll see a QuickLink code pointing to additional, related content on our Web site. Just enter that code into our QuickLink box online, which you'll see at the top of each page on our site.

Use QuickLinks to see related stories, discussion forums, research links, archives and more.

AT DEADLINE

IBM Begins Layoff Process at U.S. Sites

IBM confirmed that it is laying off about 750 people at four U.S. facilities in the first of what is expected to be a series of cutbacks by the company. Sources previously said that IBM was preparing to cut up to 9,600 of its 320,000 employees. A company spokeswoman last week declined to say how many layoffs are likely at IBM.

Second Ameritrade Co-CIO to Leave

Omaha-based Ameritrade Holding Corp. announced that Raymond Dury, the remaining member of its former co-CIO executive tandem, will resign effective next month. Fellow co-CIO Mok Choe left in November, and the online brokerage said it recently launched an external search for a new, single CIO. Until one is hired, Ameritrade added, the IT managers who now report to Dury will be responsible for day-to-day technology operations.

Chemicals Maker Names Head of IT

Houston-based Lyondell Chemical Co. said Eric Silva, its director of human resources services, will take over as vice president of IT on June 1. Silva will report to Lyondell's chief operating officer and replace Robert Tolbert, who is retiring. Lyondell said Silva has also held jobs in finance and played a key role in an installation of SAP AG applications.

Comcast Denies Privacy Violations

Comcast Corp. in Philadelphia denied charges made in a class-action lawsuit filed in Michigan that the cable TV and Internet service provider violated the privacy rights of customers by collecting data on their Web surfing habits. In February, Comcast stopped collecting the data.

Sears' CIO Departs After Lands' End Acquisition

No comment from retailers, but observers disagree on deal's influence on the move

BY TODD R. WEISS

OFFICIALS AT SEARS, Roebuck and Co. were tight-lipped last week about the sudden departure of CIO Jerry Miller on May 17, just four days after the company announced that it will acquire catalog and online retailer Lands' End Inc. next month.

Three days before his departure, Miller spoke with *Computerworld* about the pending acquisition and how it would affect IT at both companies [QuickLink: 29902]. Miller said the early plans for the two companies included keeping the respective IT departments separate, though Lands' End would be a wholly owned subsidiary of Hoffman Estates, Ill.-based Sears.

Miller couldn't be reached for comment, and Sears executives didn't return several calls asking for their remarks regarding Miller's departure.

Peggy Palter, a Sears spokeswoman, confirmed that Miller no longer works for the company, but she refused to say whether he was fired or resigned from his job. "We do not comment on former employees," she said.

Don Zimmerman, a Sears vice president of IT for credit, home services and financial products, has been named interim CIO, Palter said. Zimmerman, who joined Sears in 1996 after 12 years with Purchase, N.Y.-based PepsiCo Inc., could not be reached for comment.

A spokeswoman for Dodgeville, Wis.-based Lands' End also refused to comment. Frank Giannantonio, CIO at Lands' End since February, didn't return a call seeking his remarks.

CURRICULUM VITAE

Miller joined Sears in 1994 after 20 years at a drug wholesale company.

December 1998 Named Sears CIO

1995-98 Sears vice president of logistics

1994-95 Sears senior systems director

1974-94 Vice president of IT at Bergen Brunswig Corp.

Examining the Possibilities

Several industry analysts said that while they don't have direct knowledge of Miller's departure, there are several possible explanations for it.

Michael Dortch, an analyst at Robert Frances Group Inc. in Westport, Conn., said Lands' End's technical savvy both online and in its catalog business could have caused Sears executives to shift IT responsibility to the company with more success in those areas. "That might be sufficient to cause a disruption in the corporate firmament over at Sears," Dortch said.

Paul Daversa, CEO of executive search firm Resource Systems Group in Stamford, Conn., said Miller's departure probably wasn't related to the Lands' End deal and might have been in the works for some time. "For them to do this acquisition, there had to be technical due diligence" about the direction in which IT was heading, Daversa said. "He knew it was coming."

Carol Baroudi, an analyst at Baroudi and Associates in Arlington, Mass., said Miller may have been let go simply because he didn't keep quiet about the coming IT changes as part of the acquisition. "Maybe his days were numbered by the acquisition and he gave them an excuse," Baroudi said.

Electricity Deregulation Causes IT Problems in Texas

State hires Feld Group to tackle service delays and other problems in new system

BY MICHAEL MEEHAN

Energy deregulation in Texas has hit an IT snag, as the agency in charge of the state's electricity grid operation last week brought in a for-hire CIO firm to fix problems that have caused persistent customer service delays.

The Electric Reliability Council of Texas Inc. (ERCOT) has hired The Feld Group Inc. in Irving, Texas, to troubleshoot system problems that have arisen around switching customers to new service providers and issuing bills in a timely manner.

Starting Jan. 1, Austin, Texas-based ERCOT became responsible for every service order in its region, which covers about 85% of the state. While other deregulated states have made individual power companies responsible for the orders, Tom Noel, president and CEO of ERCOT, said his company is experiencing the growing pains of being the first major central authority to undertake this type of work.

"Things were supposed to come into our systems in a certain sequence," he said. "What we're finding is people can't respond in the sequence that was expected. We need to make it bulletproof."

Pinpointing Problems

According to Noel, ERCOT's problems center on the handling of aberrant data, out-of-sequence transactions and legacy systems that are dependent on transaction flows.

He said that out of ERCOT's 5.5 million customers, about 200,000 to 300,000 are experiencing problems.

The Feld Group, which has performed CIO duties for First Data Corp., Delta Air Lines Inc. and PepsiCo Inc., was hired in April to perform a 30-day examination of ERCOT's IT systems. The Feld Group's report called for better error detection, data validation as information travels across ERCOT's systems, and a simpler method for companies doing business with ERCOT to share their data.

Most important, the report suggested "ensuring the ability to reliably deliver, receive, trace and provide status of all transactions in and out of ERCOT."

The Feld Group has been signed to a six-month contract to oversee the company's systems upgrade.

"It may be that we can fix these problems ourselves, but it would take longer, and we want this done quick and done right," Noel said.

Judge May 'Haunt' Microsoft For Years as Remedy Enforcer

Case outcome could follow path of AT&T breakup, with future complaints, legal issues

BY PATRICK THIBODEAU
WASHINGTON

Judge Colleen Kollar-Kotelly may well become a legal specter in Microsoft Corp.'s future.

As with the judge who oversaw the breakup of AT&T Corp. in 1984, Kollar-Kotelly, who is overseeing the remedy hearing of the antitrust case, may see a steady stream of legal issues, complaints from Microsoft's competitors or requests for changes from the software giant arising from whatever remedy she eventually imposes. And if Microsoft fails to comply, in her words, she will "haunt" the company.

In the years following AT&T's breakup, Judge Harold Green made numerous legal decisions, particularly as the new Baby Bells sought waivers from various legal requirements. The unhappy Baby Bells painted him as de facto government regulator.

"The main lesson learned is even a decree that requires significant judicial involvement can be made to work," said Michael McNeely, a former U.S. Department of Justice attorney who worked on the AT&T case.

"For all the grousing along the way, to me it seemed pretty clear that the breakup of the Bell system . . . has been to the benefit of consumers," said McNeely, now an attorney at Palo Alto, Calif.-based Gray Cary Ware & Freidenrich.

Compliance Issues

In final arguments, Kollar-Kotelly heard from both sides about how they think the remedy should be enforced. She used that hearing as an opportunity to tell Microsoft what kind of enforcer she will be.

After a Microsoft attorney insisted that the company would faithfully comply with any order, the judge said there would be no other alternative but compliance.

"I would expect that that's going to be the case," said Kollar-Kotelly, "because these are the kinds of things that come back to haunt you if it turns out you don't, because I will have a memory for all of these statements."

Attorneys for the nine nonsettling states recently outlined a plan for the appointment of a special master to oversee the remedy and conduct preliminary work if a third party were to file a complaint about Microsoft's compliance with the remedy. The special master would gather facts and deliver a report to the court along with possible recommendations for action. The entire process could take four months, said states' attorney John Shenefield.

CASE HISTORY
For complete *Computerworld* coverage of the Microsoft antitrust trial, visit:
QuickLink: s1100
www.computerworld.com

Under the Bush administration settlement, a three-member technical committee would be set up to monitor compliance and bring any enforcement issues to the Justice Department.

Whether this case becomes for Kollar-Kotelly what it became for Green remains to be seen. One expert, Ernest Gellhorn, an antitrust professor at George Mason University Law School in Arlington, Va., said the specific terms of the AT&T breakup "were so undefined and open-ended that the parties were constantly going back to court." He said he doesn't believe Kollar-Kotelly will face a similar problem.

The idea of a special master as the nonsettling states proposed may be appealing to the judge, especially if that person brings technical expertise, said Hillard Sterling, an attorney and a partner at Gordon & Glickson LLC in Chicago.

"The question is whether the judge or special master can tame both sides to live comfortably, albeit competitively," he said. "It's hard to believe that we're seeing the last wave of litigation on these issues."

Remedy Options

The Microsoft antitrust trial judge has three paths to enforcement.

WHAT MICROSOFT WANTS: A three-member technical committee would monitor the company, with the Justice Department overseeing enforcement.

WHAT THE NONSETTLING STATES WANT: A court-appointed and -monitored special master would oversee enforcement.

WHAT THE JUDGE WANTS: Unknown, but she could craft rules that are a hybrid of the proposals or something entirely new.

Port Authorities Call for IT Enhancements

Terrorist warnings prompt closer look at security on ships

BY DAN VERTON
WASHINGTON

A new terrorism warning surfaced last week indicating that as many as 25 terrorists of Middle Eastern origin may have slipped into the U.S. unnoticed after stowing away aboard cargo ships that entered four major U.S. seaports.

The threat, while not new, underscores the need for better IT systems to help port authorities and local law enforcement agencies better track suspected terrorists and criminals who attempt to enter through the nation's seaports, say port authority officials.

Beth Rooney is manager of port security at The Port Authority of New York and New Jersey, where specific threats to historical landmarks last week put officials on a heightened state of alert. One of the biggest port security problems, she said, is that ship cargo information isn't received by port authorities until three to five days before a ship arrives.

"We are pushing for [systems to ensure] supply chain integrity and the integrity of the contents of the container, including that there's not a person in there," said Rooney, referring to the need for timely transmission of certified container inspection documents from authorities outside the U.S.

"I would also like to see a database or notification system for ports and law enforcement agencies affiliated with the port to network and alert each other when we discover something out of the ordinary," said Lindy Rinaldi, chief of police for the South Carolina State Ports Authority. "Right now, we do not have any communication [systems] to link other ports and law enforcement agencies together.

"Currently, all notifications are made by phone," Rinaldi noted. "This can cause serious delays in passing along much-needed information that would be useful for our homeland security protection."

> We are pushing for [systems to ensure] supply chain integrity and the integrity of the contents of the container.
>
> BETH ROONEY, MANAGER OF PORT SECURITY, THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

Financial Constraints

Anne Moise, manager of port security at the South Carolina State Ports Authority, said her organization has big plans for improving security, but little funding. For example, the port in Charleston has rolled out an identification system for access control. "This system is not fully utilized yet due to funding issues, but the format is in place," Moise said.

Funding may be on its way, however. A U.S. Department of Defense appropriations bill could provide $93.3 million to the U.S. Department of Transportation's new Transportation Security Administration (TSA) to fund port security assessments and enhancements. Likewise, the Port and Maritime Security Act of 2001, which was passed by the Senate Dec. 20, calls for $390 million in grants for port security infrastructure improvements.

Funding can't come soon enough, port authority officials said.

"Transactions between the buyer and seller take place 40 to 50 days ahead of time," said Rooney. "If you can provide the purchase order information to the authorities at the time the transaction is made, then we can have intelligence on what to look for. It's integration. The systems and the data are out there."

The Port Authority of New York and New Jersey recently requested funding to build and test a pilot version of such a purchase order transaction-monitoring function in its system. Grants will be awarded by the TSA next month.

"We can build the functionality and have it ready to go in July," Rooney said.

Brokerages Resist NYSE Call For Electronic Order Capture

New rules could prove costly in terms of tech spending and customer service

BY LUCAS MEARIAN

A PROPOSED rule change by the New York Stock Exchange (NYSE) requiring the electronic capture of all stock orders before they leave the trading desk has Wall Street concerned that it will cost millions of dollars to implement and place too great an onus on the IT departments of brokerages that still record large stock orders on paper.

Specifically, the NYSE has proposed amendments to Rules 123 and 132 that would require brokerages to electronically capture trade orders at the point of receipt prior to delivering a physical order ticket to a "post." In light of the recent stock-rating scandal involving Merrill Lynch & Co. that is expected to spread to other brokerages, electronic trade recording would further expand the NYSE's oversight capability.

"This initiative of the electronic capture of orders before they're presented in the marketplace is an effort to avoid a situation where a person could falsify an order ticket," said a NYSE spokesman.

The NYSE rules change proposes that 17 data fields be filled out by traders, including information such as a firm's exchange symbol, clearing member organizations, the number of shares involved in a trade and the tracking or control numbers used.

"Most firms don't have a system for systemically capturing information about the order at [the trading desk]," said Scott Kursman, vice president and associate general counsel for the Securities Industry Association (SIA) in New York.

Kursman argues that a paper order ticket can be updated with "a flick of a pen," while it is much more difficult to go into a software application and change 17 data fields.

The Big Board has developed a program called Front End Systemic Capture (FESC) that expands upon its electronic network for the systemic capture of all orders prior to execution.

Costly Links

SIA officials wrote an April 26 letter to the Securities and Exchange Commission (SEC) — which would have to approve the NYSE rule change — opposing the amendment, arguing that it would hurt the broker/client relationship and that it would be costly for firms to systemically link information that resides in multiple locations in both electronic and paper formats.

Kursman said the brokerages most affected by the rule are those that specialize in block orders — orders of 10,000 shares or more — which are still recorded on physical tickets. Between 1% and 4% of orders from large broker/dealer firms are written on paper at the trading desk on the floors of exchanges. Firms such as Cantor Fitzgerald LP and Goldman, Sachs & Co. specialize in large institutional orders that are taken manually, Kursman said.

The NYSE rule change requires backing into the firm's data-collection process to retrieve information about an order from an earlier point in the life of that order. "It's a question of how far the firm can look back for that information and whether all of it is available for electronic capture for the purpose of creating a single record," Kursman said.

Not as Easy As 1-2-3

The NYSE's proposed amendments to Rules 123 and 132 would:

- Require the electronic capture of order execution reports at point of sale.
- Require electronic capture of orders at point of receipt.
- Create a complete systemic record of orders handled by all brokers and their firms.

For institutional firms that handle large block orders, the change would require them to set up electronic order entry points for traders. Those computers would have to link with the firm's institutional recordkeeping databases and with the NYSE's FESC system. Kursman estimated that it would cost institutional traders like Cantor Fitzgerald and Goldman, Sachs $2 million to $10 million to set up the order trail system, including additional hardware and storage capacity.

Another problem with the proposed rules change is that it's alarmingly similar to computer system changes brokerages had to make to comply with the Order Audit Trail System. That project was approved by the SEC in June 1998 on behalf of the Washington-based National Association of Securities Dealers Inc. (NASD), the Nasdaq Stock Market's parent.

"Brokers didn't want to have to go through a whole other programming effort to create a similar process for the NYSE side, which had a different standard associated with it," said analyst Larry Tabb at TowerGroup in Needham, Mass.

An NYSE spokesman said the exchange "made every effort to have our proposal match up with procedures already approved by the SEC with respect to the NASD order trail system ... but with differences between the markets, they couldn't be identical."

Start-up's Tool Helps Users Move From AOL to MSN

BY BRIAN SULLIVAN

Microsoft Corp. has launched a $10 million campaign to lure customers from rival America Online Inc., and the technology it's depending on comes from a 12-person company in New York.

TrueSwitch, from Esaya Inc., provides the means for customers of Dulles, Va.-based AOL to switch their e-mail accounts, address books and stored e-mail over to The Microsoft Network (MSN) online service, said Lisa Gurry, Microsoft's MSN project manager. "This is the primary solution that we looked at," Gurry said. "It offered the most innovative technology."

Mark Kasiraja, chief operating officer and co-founder of Esaya, said the company CEO, Thomas Isaac, designed the software specifically to let Internet service providers (ISP) do what MSN is doing: grabbing a rival's customers. "We're targeting ISPs," Kasiraja said.

But Kasiraja said the tool could be used for any operation in which information needs to be transferred from one Web-based system to another. And the company is willing to tailor the tool to meet each client's specific needs, he added.

The tool, which is Java-based and operates on systems running Unix, is at its core a data integration, mapping and transformation engine. It logs on to AOL using the customer's current user ID and password. It then collects all of the necessary information about the user's e-mail address book and account and migrates it to MSN, Kasiraja said.

Kasiraja said that if the MSN campaign is a success, Esaya should have no problems scaling TrueSwitch to meet a rise in demand. He said Esaya monitors load, and if demand goes up, the company simply adds more servers to the operation. That, he said, is all that's required to scale the tool.

TrueSwitch goes into an application through the front end rather than the back end, he said. That lets business rules remain intact during a change.

Kasiraja said pricing is based on a flat licensing fee plus a per-user fee. He declined to elaborate, and MSN wouldn't comment on how much it spent on the tool. But Kasiraja said the higher the licensing fee paid upfront, the lower the per-user fee will be.

"There is nothing technologically surprising about it at all," said David Ferris, president of San Francisco-based Ferris Research Inc.

ISP Switcheroo

Esaya says TrueSwitch does the following:

- **MOVES THE DATA** in important applications between providers.
- **NOTIFIES** selected contacts of the user's new e-mail address.
- **FORWARDS E-MAIL** to a new address for as long as the old account is active.
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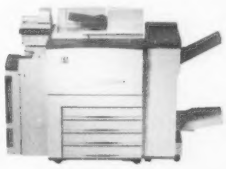

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BRIEFS

Sun Sees Q4 Profit Despite Order Lag

Sun Microsystems Inc. said it's sticking by a forecast that it will return to profitability in its fourth quarter ending June 30, even though orders are lagging slightly behind third-quarter levels. Sun had predicted a slight sequential uptick in revenue this quarter. But Michael Lehman, Sun's chief financial officer, said the current order shortfall "is not of great significance."

Reports: IT Spending Likely to Be Flat

Technology spending budgets controlled by the IT departments at U.S. firms are expected to drop by an average of 0.4% this year, according to a survey of 369 users conducted this month by Gartner Inc. in Stamford, Conn., and The Goldman Sachs Group Inc. in New York.

Cambridge, Mass.-based Giga Information Group Inc. also predicted that IT spending this year will be about the same as last year.

Oracle Releases 9i Upgrade to Developers

Oracle Corp. released an early version of an upcoming Oracle9i database upgrade for software testing use by application developers. The Oracle9i Database Release 2 code is available free of charge to developers who have registered for the early-access program. The upgrade is due for general release next month on a mix of Unix, Linux and Windows systems, Oracle said.

Netscape Ships 7.0 Web Browser Preview

Netscape Communications Corp. announced a preview release of its Netscape 7.0 Web browser. The subsidiary of AOL Time Warner Inc. said new features include the ability to click between multiple tabbed Web pages in a single window.

Sun Weaves Key Features Into Solaris 9

Adds middleware, management capabilities to up functionality, lower costs of its Unix OS

BY JAIKUMAR VIJAYAN

SUN MICROSYSTEMS Inc.'s move to integrate key middleware and management components into the latest version of its Unix operating system, which was released last week, should give customers added functionality at a lower cost than before, say IT managers and analysts.

Making such a wide range of functions available at the operating system level is yet another sign of Sun's maturity — and ambition — in the enterprise software space, said Yefim Natis, an analyst at Gartner Inc. in Stamford, Conn.

"Sun has realized that the operating system of the past functions at far too low a level to compete with enterprise infrastructure software," Natis said. "What they are trying to do is to move their operating system up the stack" with the latest release of Solaris, Natis said.

Solaris 9 comes equipped with more than 300 new features intended to boost the reliability, availability, scalability and performance of the Unix operating system. Key features include a bundled application server, a directory server and enhancements to the operating system's partitioning, high-availability, clustering and security capabilities.

The features should give customers greater functionality right out of the box, said Shawn Willett, an analyst at Current Analysis Inc. in Sterling, Va.

"If you are a Sun user and thinking of implementing these functions, it is going to be easier and cheaper to get it with the operating system" than it would be to buy and install those features separately, Willet said.

For instance, the availability of the Lightweight Directory Access Protocol (LDAP) directory server with Solaris 9 should make identity management and access control tasks easier to handle, said Matthew D. Stock, director of IT in the computer department at the University of Buffalo in New York.

OPERATING SYSTEMS

The department currently uses a Network Information System (NIS) design for maintaining user identification and authentication information on more than 5,000 users. An LDAP server provides greater security and manageability for doing that, Stock said.

"As a department, we are trying to find a different solution and get away from this whole business of password files and NIS," Stock said.

Bundling the Sun Open Net Environment application server with the operating system should also reduce application server costs and make installation easier. It should also help push wider adoption of the Sun application server platform in a market dominated by IBM's WebSphere and BEA Systems Inc.'s WebLogic application servers, analysts said.

Some of the most important enhancements to Solaris are those that make hosting large database management systems an easier and less time-consuming process, said Bill Claybrook, an analyst at Aberdeen Group Inc. in Boston. ◗

AN EXEC ON 9
Sun Vice President Anil Gadre discusses Solaris 9 and Unix.
QuickLink: 29341
www.computerworld.com

More Under The Sun

The functions bundled with Solaris 9 include:

- Sun ONE application server
- Sun ONE Directory Server
- Solaris 9 Resource Manager software
- Solaris Volume Manager software
- SunScreen Firewall

Sherwin-Williams Brushes SCO Unix Aside, Adopts Linux

Will deploy IBM PCs running Turbolinux at 2,500 paint stores

BY TODD R. WEISS

Sherwin-Williams Co. is deploying IBM PCs running the Turbolinux operating system to replace SCO Unix-equipped systems throughout its 2,500 stores across North America.

In an announcement last week, the Cleveland-based paint manufacturer and retailer said it's moving to Linux and IBM to upgrade its point-of-sale and in-store operations, while minimizing its transition costs from established Unix systems.

Under the multimillion-dollar deal — the exact value of which isn't being released — IBM will install about 9,700 of its M41 NetVista desktops, along with monitors, printers, cash drawers and related products, in Sherwin-Williams' stores, said Peter Neilsen, a Linux executive at IBM Global Services. The new Turbolinux-equipped systems will run all store functions, including customer transactions, inventory and software applications used for paint mixing and tinting. One PC will be configured as an in-store server at each location.

Bill Thompson, director of IT at Sherwin-Williams' Paint Stores Group, said in a statement that the new systems will allow an easy transition from The Santa Cruz Operation Inc.'s (SCO) Unix systems. SCO, formerly a leader in the Unix business, was purchased by Caldera International Inc. in Lindon, Utah, in August 2000.

Blake Stowell, a Caldera spokesman, said the company is disappointed about losing Sherwin-Williams' Unix business. However, he said the paint company remains a customer and "hasn't closed the door on Caldera."

Sherwin-Williams and Caldera are engaged in talks about using Caldera's Volution management application within the new systems being deployed, he said.

Sherwin-Williams' IT staff designed and developed the new systems and has ported the company's proprietary applications to Linux from Unix. The company's IT staff will work with 500 to 1,000 IBM Global Services employees who will assist in the deployment, which will begin in July and be completed in the second quarter of 2003.

Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H., said the deal is important because it shows "the mainstreaming of Linux" inside a large retail operation. ◗

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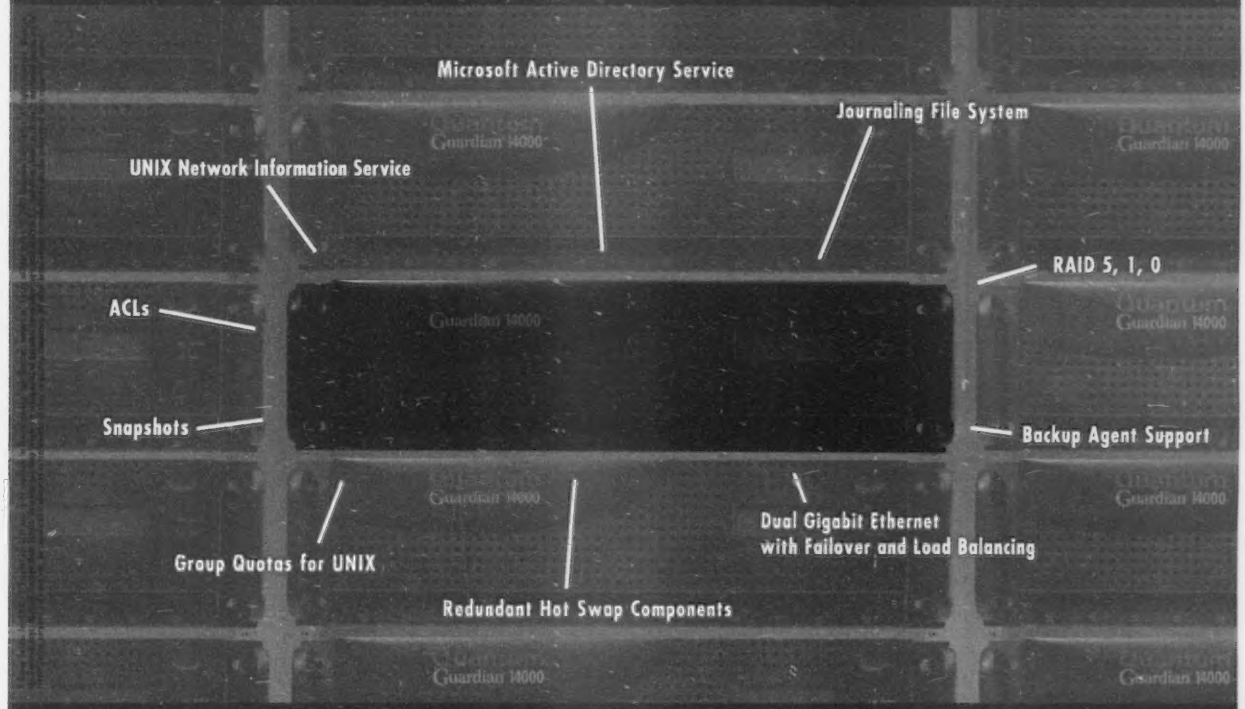

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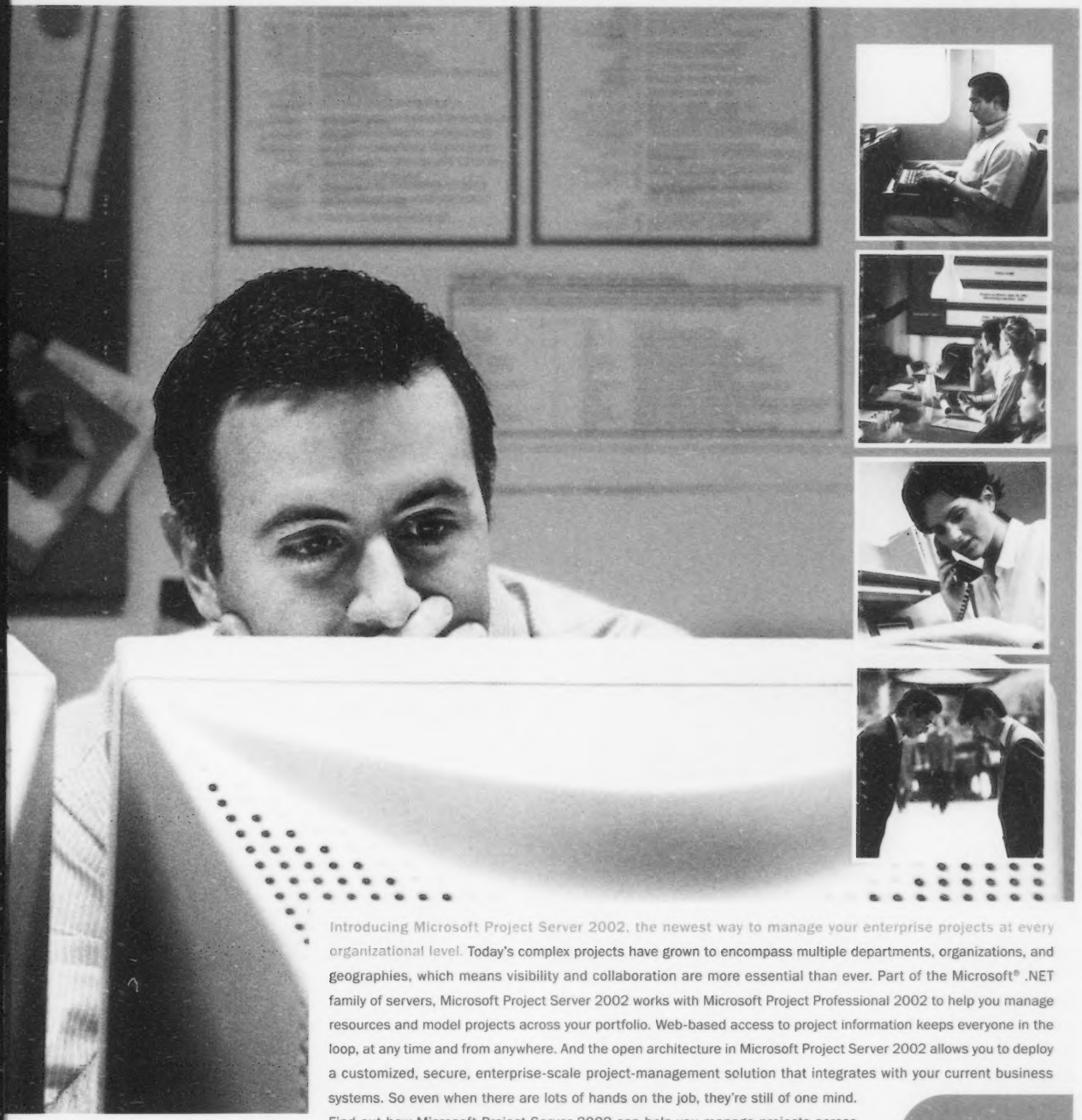

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EAI Vendors Add More Support for Web Services

Tibco, Vitria tie emerging technology to business process integration tools

BY MICHAEL MEEHAN

FURTHERING their delivery of Web services support to corporate users, integration software rivals Tibco Software Inc. and Vitria Technology Inc. last week released tools that combine the emerging technology with business process management capabilities.

Analysts said the latest announcements reflect a move by enterprise application integration (EAI) vendors to offer bona fide mission-critical Web services technology. And some users are already taking the new offerings and using them in integration projects.

For example, Denver-based Qwest Communications International Inc. said that it plans next month to launch an integration framework that links its internal order entry, service assurance, customer relationship management, billing and inventory systems. Using new tools from Palo Alto, Calif.-based Tibco, all of the data in those systems will be made available via Web services.

WEB SERVICES

Tibco announced the addition of Web services support to its business process management software, which lets users coordinate automated transaction processes and workflows across applications. The software vendor said it has now completed an initiative to blend Web services functionality into its entire EAI suite.

Meanwhile, Sunnyvale, Calif.-based Vitria released Version 2.0 of a similar Web services module for its business process management integration software (see box).

Seattle-based CapitalStream Inc., a company that processes business credit data for financial institutions, used a beta-test version of Tibco's new Web services tool to create direct links between an online credit application form and the back-end approval mechanism.

The project, carried out with Walnut Creek, Calif.-based Bank of the West Inc., was completed in February.

By eliminating the need to re-enter data and streamlining workflows, the links have in some cases helped cut application processing times from five days to just one, said Jeff Dirks, CapitalStream's president.

It would be impractical for CapitalStream to try to recast an entire 20-step online application process with Web services technology, Dirks said. But Web services can be used to streamline certain parts of the procedure, he added.

"The whole process doesn't have to be Web service-enabled, just one piece of it," Dirks said. "That way, we can be strategic about how we use the technology and only implement it when we can define a clear return on investment."

New Role for EAI Vendors

While Web services technology such as Simple Object Access Protocol messaging and the Web Services Description Language might make it easy for users to expose application interfaces on their own, Andrea Eubanks, Tibco's director of products, said EAI vendors can still play a role in coordinating integration processes and linking to legacy systems.

But the use of Web services links does mark a departure from the messaging roots of integration middleware, Eubanks added. "Messaging is just a pipeline," she said. "We're no longer saying our way is better than anyone else's."

Tyler McDaniel, an analyst at Hurwitz Group Inc. in Framingham, Mass., said Web services may initially be used more as an integration technology than as a component of business-to-business applications. They give EAI vendors the ability to target tactical deployments by users instead of massive and expensive enterprisewide projects, he noted. ◗

AT A GLANCE

Two for One

The rival Web services integration tools released by Tibco and Vitria can do the following:

CREATE Web services based on existing applications with no new coding.

INCORPORATE Web services into multisystem business transactions.

PROVIDE access to Web service-based data via Web portals and wireless devices.

MANAGE AND MONITOR Web services applications and components.

Colleges Learn Advantages Of Using Commercial E-Mail

Schools switching from customized messaging systems

BY JENNIFER DISABATINO

Freeware and a lot of IT management creativity have traditionally fueled college messaging systems. But that's changing as some universities look to off-the-shelf applications to reduce maintenance work and provide better security.

Within the past year, several colleges and universities have switched from their old, custom-configured e-mail systems to commercial products. However, they're not buying the same e-mail systems preferred by large corporations. Instead, they're moving to thin-client and Web-based applications that can run tens of thousands of user e-mail accounts on a single server.

"It usually [was] sort of a cobbled-together thing," said Matt DeFoor, directory engineer at the University of Kentucky in Lexington. For example, his school previously used the freeware version of sendmail Simple Mail Transfer Protocol software and San Diego-based Qualcomm Inc.'s freeware product, Qpopper. It lets messages be downloaded to e-mail client software such as Qualcomm's Eudora or Microsoft Corp.'s Outlook.

Last summer, DeFoor said, he replaced that setup with Internet messaging software developed by Novell Inc. and five of Dell Computer Corp.'s Windows-based PowerEdge 6450 servers. The university now has more than 30,000 user accounts on the Novell Internet Messaging System software, which is being renamed NetMail as part of an upgrade that's due out next month.

DeFoor spread the e-mail accounts across the five Dell servers for redundancy and performance reasons but said he's now considering putting all the accounts on one server.

Management oversight is much simpler than it was on the old system, according to DeFoor. And the Internet messaging software is much less expensive than a full-fledged corporate e-mail system would be. Kentucky has to pay only 6 cents per user mailbox for its Novell accounts, DeFoor said.

Specialized commercial e-mail applications also have a lower total cost of ownership, said Roy Teahen, director of Internet applications and systems at Baker College, a Flint, Mich.-based school that operates a dozen campuses.

> We don't have to worry about setting up a client [application] at this computer at this campus, or that computer at that campus.
>
> ROY TEAHEN, DIRECTOR OF INTERNET APPLICATIONS AND SYSTEMS, BAKER COLLEGE

Until last year, Teahen said, Baker used a combination of freeware code and in-house programming to run its e-mail system. Now, the school has 37,000 user accounts on a clustered pair of specialized e-mail servers made by Sunnyvale, Calif.-based Mirapoint Inc.

One server runs the e-mail system, while the other acts as a backup machine, Teahen said. Messages are stored and routed by Mirapoint-developed software and accessed through Web browsers.

"We don't have to worry about setting up a client [application] at this computer at this campus, or that computer at that campus, or setting up a laptop [for a professor] to go to a conference," Teahen said. "That's all gone now." ◗

MORE THIS ISSUE

Novell looks to boost its e-mail software business with its planned NetMail upgrade. Read more on page 21.

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BRIEFS

Microsoft Warns of Debugger Flaw . . .

Microsoft Corp. warned that a security hole in the authentication mechanism used by a debugging tool included in Windows NT 4.0 and Windows 2000 could allow attackers to run malicious code, delete data or make configuration changes on unprotected servers. Microsoft gave the flaw a "critical" severity rating and urged systems administrators to install a new patch.

. . . While Cisco Says IP Phones at Risk

Cisco Systems Inc. disclosed that it has identified several security flaws in its line of IP telephones, including one that leaves the devices vulnerable to denial-of-service attacks. Cisco said attackers could also take control of its IP Phone 7910, 7940, and 7960 models and modify configurations if the products are left unprotected. The company issued a patch to plug the holes.

Intel Buys Optical Network Technology

Intel Corp. agreed to acquire tunable laser technology from San Jose-based New Focus Inc. as part of a plan to develop optical networking components that cost less than current devices. Intel said it's paying New Focus about $50 million for the laser technology, which is designed to help optical transceivers increase the bandwidth of fiber networks.

Short Takes

Andover, Mass.-based investment firm CMGI INC. said it plans to buy full ownership of its ENGAGE INC. subsidiary. CMGI currently owns 75% of Engage, an Andover-based developer of marketing software. . . . Hoofddorp, Netherlands-based network services firm KPNQWEST NV filed for bankruptcy protection under Dutch law.

Worm Threatens SQL Server Accounts

Microsoft urges use of previously released patch and beefed-up password protection

BY JAIKUMAR VIJAYAN

SECURITY ANALYSTS last week warned of a self-propagating worm targeting Microsoft Corp.'s SQL Server software.

The worm, called SQLSnake, scans for and attacks Internet-connected SQL Server accounts that aren't protected by administrative passwords. Once it infects the server, it exports all user passwords on that server to an external e-mail account, said Elias Levy, chief technology officer at SecurityFocus in San Mateo, Calif.

SQLSnake also uses the compromised machine to similarly infect other vulnerable SQL servers, Levy said. "It is not exploiting any new vulnerability. It is just looking for administrative accounts with no passwords," he said.

The emergence of the worm and of malicious code that takes advantage of previous vulnerabilities in SQL Server make it important for users to deploy a patch that Microsoft had previously released for SQL, a Microsoft spokesman said. "Microsoft is advising SQL Server users to take action to protect themselves against attacks that seek to exploit blank passwords and a [separate] vulnerability addressed with Microsoft Security Bulletin MS02-020," the spokesman said.

Analysts were first alerted about the worm last Monday, after a huge weekend increase in scanning activity for port 1433, which is commonly used by Microsoft's SQL Server.

"We've been watching reconnaissance activity against Microsoft's SQL Server for the past nine months," said Tim Belcher, chief technology officer at Riptech Inc., an Alexandria, Va.-based managed service service provider.

But the scanning activity increased by 90% over the weekend and a further hundredfold from Monday to Tuesday of last week, he said.

1,600 and Rising

SecurityFocus has received reports of about 1,600 systems that have been infected, with that number growing by about 100 every hour, Levy said.

"This is a potent worm, and it is propagating with impressive speed. If you are running a misconfigured SQL Server, you are likely to be compromised very shortly," Belcher said.

SQLSnake isn't as big a threat to the Internet infrastructure as Code Red and Nimda were, because there are fewer SQL Servers on the Internet than there are Microsoft Internet Information Servers, which were targeted by those previous worms, Belcher said.

Users can mitigate exposure by blocking Internet access to port 1433, according to an alert posted by Russ Cooper, moderator of the NTBugTraq mailing list. It's also important to ensure that the administrator account has a password and to disable TCP/IP network libraries if you're not using them, he added.

Also, review the configuration and installation of systems that may be inadvertently running SQL Server and disable unnecessary deployment, Riptech said in its advisory.

And Microsoft recommended using strong authentication for access control.

WHAT TO DO

- **SECURE** your systems administrator log-in account with a non-NULL password.
- **BLOCK** port 1433 at your Internet gateways and/or assign SQL Server to listen on an alternate port.
- If port 1433 needs to be available on your Internet gateways, **ENABLE** egress/ingress filtering to prevent misuse of this port.

Tools Focus on Automated Security Policy Management

Software enforces IT usage policies

BY JAIKUMAR VIJAYAN

Mountain View, Calif.-based security vendor Polivec Inc. last week introduced a product to automate the process of monitoring and enforcing corporate security policies.

Using Polivec Enforcer, security administrators will be able to monitor a network for user actions or system configurations that violate an organization's stated security policy, according to the company.

The release is one of an increasing number of products that address a growing need for tools to help administer and enforce IT usage policies, users and analysts said.

Policy automation should help companies continuously monitor the security status of their organization and systems, said Clint Kreitner, president of The Center for Internet Security, a nonprofit in Bethesda, Md., that helps corporations with security-related issues.

Such monitoring can extend all the way down to the proper configuration of workstations, servers, routers, firewalls and switches at the detailed operational level, he said.

The Air Academy Federal Credit Union in Colorado Springs is using Enforcer from Mountain View, Calif.-based Polivec to do many of those things. The credit union now gets automatic alerts if usage policy is breached. Security flaws such as nonsecure user passwords, faulty or inadequate patches, and unauthorized changes to configuration or registry settings all trigger alerts to the systems administrator, said Butch Hill, vice president of IT at the Air Academy Federal Credit Union. The alerts are pushed up the management chain if they aren't acted upon within preset time limits.

"It's been really useful for us," Hill said.

Volvo Finance North America in Montvale, N.J., uses configuration management software from Configuresoft Inc. in Woodland Park, Colo., to ensure policy compliance. The software also helps monitor patches, set access permissions, randomly change administrator passwords and monitor the network for configuration changes that might cause a breach.

Configuresoft's software lets companies bring everything into compliance and manage security policies more efficiently, said Anthony DeVoto, a Windows NT systems administrator at Volvo Finance.

How They Work

SECURITY POLICY MANAGEMENT TOOLS:

INSTALL agents in client systems

GATHER usage, configuration, password and other management information with the agents

ENFORCE access controls, usage permissions, strong password controls and other policies

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Continued from page 1

Navy

Still, the massive project has been fraught with delays and implementation problems, demonstrating the difficulties enterprises stand to encounter when undertaking large-scale outsourcing plans.

For example, in a global organization like the Navy, which insiders describe as a conglomeration of hundreds of IT fiefdoms, attaining enterprisewide buy-in to the type of cultural change that N/MCI would bring has proved to be difficult at best.

"The goals and success of the enterprise as a whole ... necessarily take precedence over individual desires," states the order issued last week by N/MCI director Rear Adm. Charles Munns, a copy of which was obtained by *Computerworld*.

Project Backlash

But what some insiders characterize as a mismanaged, overzealous deployment plan has produced a backlash from Navy IT managers and claims that users are unable to do their jobs effectively.

The N/MCI deployment schedule has moved IT support for existing systems that users need to do their jobs to last on the priority list, said an IT support manager at the Naval Air Systems Command (Navair) in Patuxent River, Md.

"It used to be that the customer always comes first. Now, it's, 'We don't care what the customer says; just go out and get [N/MCI] done,'" the IT support manager said.

"N/MCI is all take and no give," said a systems administrator for the Navy's Southwest region, which includes naval air stations in Lemoore, Calif., and Fallon, Nev. "They are not set up to be service-oriented," he noted, adding that he has been waiting for more than eight weeks for the N/MCI program office to approve a simple client/server software maintenance release.

"I cannot get any information from [EDS] that indicates what anyone is doing with my software submittal," the administrator said. "As a result, I cannot tell my customers when it will be released."

Six N/MCI insiders contacted by *Computerworld* last week requested anonymity out of fear of losing their jobs. The Navy and EDS declined to respond directly to comments from anonymous sources. But John Clendening, an EDS spokesman, said that despite the few detractors who are resistant to change, "the [N/MCI] program is on solid footing."

Double-Edged Sword

The N/MCI blade indeed cuts both ways, said an EDS engineer who works at the Patuxent River air station. "The people at Navair are very smart and resourceful, and if they wanted N/MCI, it would already be in [place] and working smoothly," the EDS source said. According to the source, because of repeated work stoppages ordered by local Navair brass who have cited remote access, security and help desk concerns [QuickLink: 29843], it has taken two years to deploy 1,000 seats — a project that should have taken 90 days. "They have just been fighting N/MCI so long, it has become a passion," the EDS source said.

The Navy deployment order now requires any work stoppages to be approved by Munns. In addition, local site leadership teams have been established to ensure that deadlines are met (see box).

But the real concern lies in dealing with technical problems associated with existing systems, said the IT support manager at the Patuxent River air station. In addition to a purchasing ban on new equipment and software outside of N/MCI, which prevents users from upgrading, repair requests for existing systems are piling up because support personnel are being asked to work on N/MCI deployment issues.

Navy and EDS insiders also point to technical delays stemming from the Navy's 80,000-plus legacy applications, many of which must be installed on kiosks outside of the intranet because they haven't passed security testing or don't run on Windows 2000.

"The legacy applications [challenge] is something the Navy did not understand when it started the N/MCI effort," said Navy Capt. Chris Christopher, in a recent interview.

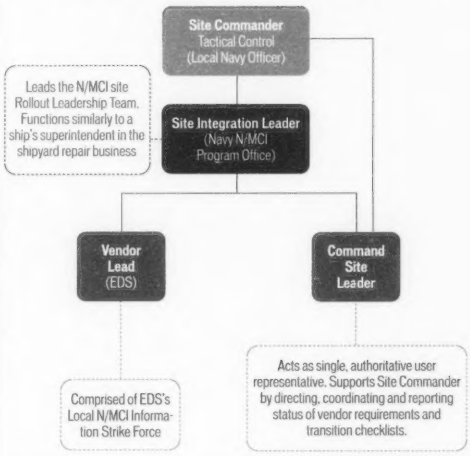
"We've since started a Navy application database task force. Kiosks are part of the transition," Christopher said.

N/MCI Installation Plan by June 30

- Naval Air Station (NAS), Patuxent River, Md. **3,800 SEATS**
- NAS, Lemoore, Calif. **3,000 SEATS**
- Naval Surface Warfare Center, Port Hueneme, Calif. **2,453 SEATS**
- HQ Space and Naval Warfare Systems Command, San Diego **1,562 SEATS**
- HQ Commander-in-chief Atlantic Fleet, Norfolk, Va. **1,350 SEATS**
- Naval Air Warfare Center Training Systems Division, Orlando **1,200 SEATS**
- Washington Navy Yard, Washington **1,083 SEATS**
- Naval Surface Warfare Center, Crane, Ind. **1,000 SEATS**
- Navy HQ Offices, Crystal City, Va. **876 SEATS**
- Navy HQ, Pentagon **832 SEATS**
- NAS, Fallon, Nev. **800 SEATS**
- Naval District Washington (NDW) Nebraska Avenue Complex, Washington **749 SEATS**
- NAS, Atlanta **663 SEATS**
- Naval Air Reserve, Point Mugu, Calif. **307 SEATS**
- NDW Anacostia Annex, Washington **276 SEATS**
- Naval Reserve Center, Fort Worth, Texas **164 SEATS**
- Naval Reserve Center, New Orleans **114 SEATS**
- HQ Naval Reserve Readiness Command South, Fort Worth **77 SEATS**
- Naval Reserve Center, Shreveport, La. **65 SEATS**
- Naval Reserve Center, San Antonio **42 SEATS**
- Naval Reserve Center, Baton Rouge, La. **38 SEATS**
- Naval Reserve Center, Lubbock, Texas **34 SEATS**
- Naval Reserve Center, Amarillo, Texas **28 SEATS**

TOTAL: 20,513 SEATS

N/MCI Site Rollout Leadership Team



> It used to be that the customer always comes first. Now, it's, 'We don't care what the customer says; just go out and get [N/MCI] done.'
>
> **UNIDENTIFIED IT SUPPORT MANAGER, NAVAL AIR SYSTEMS COMMAND**

less than / *abbrev:* **<**

As markets sag and budgets shrink, we know you're trying to do more and more with less and less. So here are just a few ways Sprint can help you create more value for a lot less (less hassle, less time, less waste, less money — you get the picture).

One source from voice to data to wireless

Sprint gives your business the advantage of one single point of contact domestically and globally for voice, data, Internet and managed services. Our integrated approach means everything works together to help you lower your administrative and management costs.

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Our self-healing SONET ring architecture provides 99.999% reliability. (It doesn't get much better than that.) In fact, Sprint's long distance network had the fewest FCC-reportable outages of the top three major competitors for the sixth straight year. So you get the virtually error-free data and voice transmissions that help ensure your customers' loyalty and your company's bottom line.

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Sprint lets you leverage the investment you've already made in most existing systems and applications. But when you're ready to move to new technology, we've made it faster and more affordable by investing in interoperable product platforms. (Our network boasts seamless interoperability between IP, Frame Relay and ATM platforms.) And using existing network solutions and equipment while you adopt new technologies can drive lower capital expenditures.

More value at a price that's less than you might think — another sign of an intelligent network and the people who make it work (for you).

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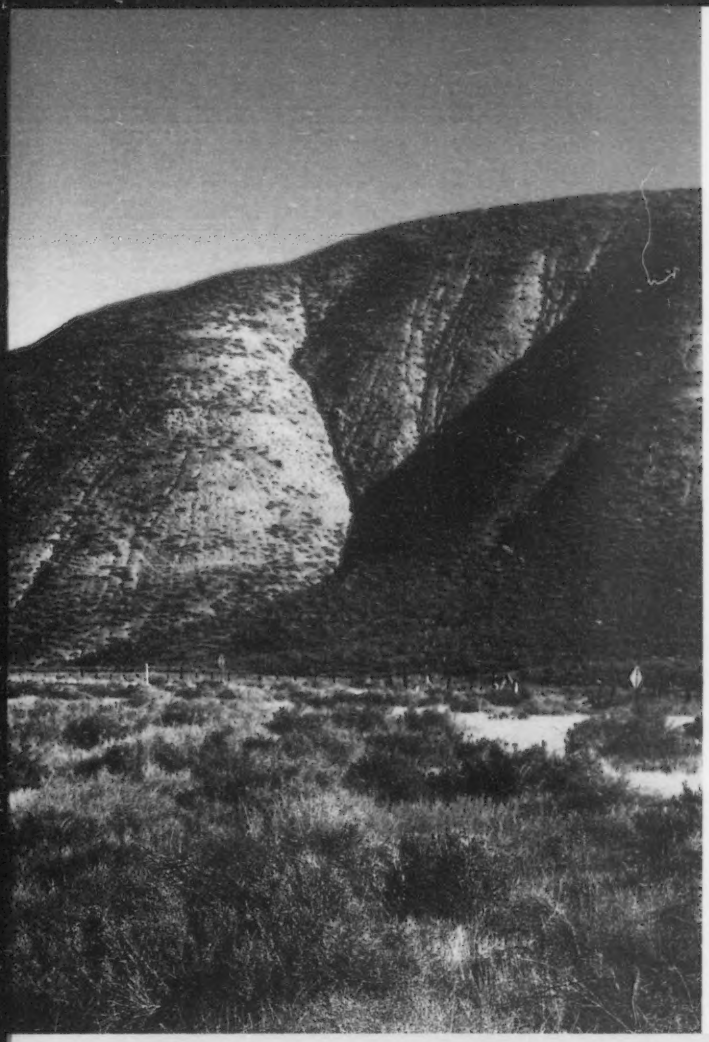

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Reports from the road: Virgin Atlantic Airways.
The Solaris Operating Environment ensures that applications for Virgin Atlantic Airways – from Web-based frequent flier information to mission-critical flight operations – are easily manageable and readily available.

Reports from the road: Wingcast.
Thanks to Wingcast, cars will soon be equipped with wireless safety, communication and convenience services. Anticipating millions of wired vehicles to come, Wingcast wisely chose the Solaris 8 Operating Environment for its scalability and reliability.

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PATRICIA KEEFE

Counting Is King

MY HIGH SCHOOL journalism teacher surprised us one day with a visit from the head of Boston's Associated Press bureau. The lesson we learned that day should be taught to every CIO on the planet.

PATRICIA KEEFE is editorial director at *Computerworld*. You can contact her at **patricia_keefe@computerworld.com.**

We leaned forward excitedly in our chairs, fully expecting an inside look at murders, drug busts and political scandals. But instead of regaling us with war stories, he lectured a startled audience on Finance 101.

Further deflating our afternoon, he said that if we wanted to be successful journalists, we shouldn't major in journalism! Or political science or, say, government studies. Nope. Never mind all that. Major in (gasp) accounting.

The entire room reared back in dismay. We thought he was nuts until he explained himself: Everything comes down to following the money.

Campaign finance scandals, state contract kickbacks, payoffs, bribes, embezzlement, budget allocation battles — the money trail was the foundation of most investigative journalism and many a Page One story. Suddenly, it all became clear. (Not necessarily any less depressing; I mean, major in accounting? No way.) But we got the message. And you need to get it, too.

Counting is about to become king for a budget-strapped, tightly staffed and vendor-besieged IT community. The flash and excitement of leading-edge technology have been usurped by rock-bottom practicality. Making do with what you've got, and making what you've got pay its dues, is today's mantra.

You are also charged with critical business tasks like building the department budget and working out contracts for licenses, outsourcing, consultants and support. And you are expected to forecast three- and five-year strategic technology plans that are aligned with business goals. You may not be in any position now to take on new projects, but you need to be prepared to move once the economy — and corporate budgets — loosen up.

You also need to keep an eye on profitability. A Deloitte & Touche survey of CEOs at what it considers the 500 fastest-growing high-tech companies in the world found that 34% consider profitability their top challenge. Talk to your CEO; I bet it's become his top issue as well.

Obviously, you can't possibly address those problems accurately, build a sustainable budget or negotiate successfully with your vendors and service providers if you can't count up what you've already got, calculate the extent to which you are using that capacity and figure out from there what you'll need down the road.

To do that, you've got to get organized. You have to systematically crawl through every office, outpost and mobile setup in the company and count up every piece of equipment, every seat and type of software, every license, contract and consultant. Then, just as systematically, you have to calculate the value, number of cycles, number of seats, the number of users and so on of your IT domain.

You need to look for redundancy, unused capacity and unaccounted-for equipment (you know it's out there). Then move on to figuring out the total cost of ownership of your equipment, the ROI on your projects, the bottom-line costs of your licenses and support contracts. Once you know what you have, you can figure out what you'll need.

Unless you do this legwork, your planning will be off and your budget misaligned. And there goes the ability of IT to contribute to today's profitability goals and enable the success of your business. ◗

PIMM FOX

Warehouses Need Unique Databases

YOUR BUMPY PATH toward getting a clear, single view of the customer by using a data warehouse can be smoothed with the right kind of database.

Part of the complexity begins with efforts to coalesce disparate data that resides in databases linked to already functioning applications. In addition, much of the valuable data inside an enterprise is unstructured and not well conditioned for traditional relational databases.

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Vendors also underestimate the challenge of supporting a data warehouse as compared with more typical transactional processing.

NCR Teradata focuses its database resources specifically for data warehouse workloads.

Teradata's database uses a hash-based file system in contrast to the index-based system favored by companies such as IBM and Oracle and used mainly for finding rows in a transaction process.

An index-based system works well for write-oriented tasks requiring low latency for juggling lots of transactions concurrently; Teradata's product isn't designed for these kinds of tasks.

For read-oriented analytical operations requiring a multitude of data connections, Teradata's database is eye-catching. Wal-Mart, Bank of America, 3M and British Airways have been enticed into using Teradata's technology to consolidate data marts into a data warehouse.

As for competitors, says Kevin Strange, an analyst at Gartner, there's "little evidence" Oracle is improving its ability to handle complex application-neutral data model implementa-

For more columnists and links to archives of previous columns, go to **computerworld.com/columns**

tions that are at the heart of data warehouse activities.

Strange says there's some confusion over IBM's approach: Should companies choose the extended DB2 product or Red Brick and the Informix Extended Parallel Server (XPS)? "IBM sales teams have been proposing Informix XPS and Red Brick in some new customer implementations, even with IBM management stating these products would not be proposed for new implementations," says Strange.

Microsoft's SQL Server has received low-end acceptance for simple data marts but lags when faced with large data volumes and complex data models.

Sybase's IQ and Adaptive Server Enterprise products are candidates for database marketing where the organizing of customer lists is based on only a few criteria.

But a data warehouse is something else. It must be powerful and versatile enough to give non-IT workers the chance to analyze data without IT constraints. There's little value in analyzing data that has in essence been predigested because the database can't handle complex queries.

But remember, if you can't apply parallel-processing techniques to your workload, hardware boosts will be a waste of money. And that would make your road to a single customer view a bumpy one, indeed. ◗

MICHAEL GARTENBERG

Being Careful With IM Use

INSTANT MESSAGING, once the turf of teenagers chatting with peers and family members keeping in touch long distance, is an increasingly valuable business tool.

And companies are exploiting IM effectively. Managers can touch base with peers and direct reports in real time, telecommuters can feel more connected to events at the office, and questions needing immediate responses are no longer held up by delays. The more e-mail clutter users face — and the more crucial messages they miss while scanning hundreds of spam messages — the more IM's popularity will grow.

Yet, unlike many other mission-critical systems, IM is being deployed throughout many businesses without a thought about administering it. In fact, much of IM's business growth is the result of the formation of ad hoc "buddy lists," often at the behest of a manager who chooses the IM tool, such as AOL's AIM, Microsoft's MSN Messenger or Yahoo Messenger. But while IM may increase productivity, many users are often *too* connected, since IM creates pressure to work longer.

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But there's an even darker side to IM that may be exposing businesses and IT managers to risk. Consumer-based services such as AIM and MSN Messenger are just not up to the demands of the enterprise environment. If your employees are deploying ad hoc IM networks with some of these free commercial services, here's what you must be careful about:

■ First, because IM is instant and immediate, there's a sense of imagined privacy, almost the fleeting atmosphere of a conversation. A number of stories are circulating about managers who thought their IM conversations were no more permanent than a gossip session at a water cooler, only to have to face their words later and deal with the ramifications, including embarrassment or, in extreme cases, their firings. (It's easy to preserve a transcript of an IM session.) Consumer-grade IM services also aren't secure. If you're worried about security (and you should be), you must consider using an IM server that will work only in-house. Try this rule: If you wouldn't want to see it posted online, don't say it in an IM message.

■ Second, many businesses have strict regulations about keeping correspondence logs. (You financial services folks paying attention?) Since instant messages aren't typically stored on servers, there's no record. Compliance officers in regulated firms must ensure that IM can't be classified as a method of communication that must be logged, or they must ensure that logging mechanisms are in place. Another rule: Make sure you can keep only what's needed and discard the rest.

■ Finally, there are privacy and productivity issues. The courts have long held that businesses have the right to monitor and read employee e-mail. That would also likely apply to IM. It's important to set clear policies on usage, such as who may be allowed on a buddy list. End users should also be reminded that someone might be eavesdropping on IM conversations. Rule: Treat IM the way you did when e-mail first arrived. Set clear usage policies and make sure everyone understands the rules before playing.

Instant messaging can be a valuable tool for communicating effectively and immediately. But in the wrong hands, it can lower productivity, potentially humiliate your company and compromise corporate networks. ◗

ENTERPRISE IM LAGS EXPECTATIONS

A March survey shows 30% of companies officially using IM, far below an IDC projection made 18 months earlier.

QuickLink: 28314
www.computerworld.com

READERS' LETTERS

XP Saga Strikes Chords

MY XP upgrade was very similar to Robert L. Mitchell's, as described in "Tales of the UneXPected" [QuickLink: 28875], although I bought my Dell Dimension 4100 last June, so most of the software is newer and didn't need replacing.

The real hassle was hunting down all the newest drivers. The Dell Web page warns that downloading from anywhere else means Dell doesn't need to help me anymore. Yet when I called Dell tech support to complain about the site's incomplete set of drivers, they told me to go to the various manufacturer sites and look for myself. So much for sticking with a single vendor to ensure coherent support.

Mark Cybulski
Rochester, Mich.

THIS WAS a classic case of how *not* to upgrade other users' PCs. Mitchell should have installed XP and tested his applications on a separate PC so as to not subject his clients (in this case, his family) to the hardships of the issues he encountered. The cost of the exercise didn't justify the benefits, as the users were working fine in the existing environment and the upgrade brought them no obvious benefits.

Ryan L. Bouffard
Programmer/analyst
Kwantlen University College
Surrey, British Columbia

It's an Employer's Market

I HAVE SOME observations regarding the "skills imbalance" discussed in Patricia Keefe's May 13 editorial [QuickLink: 29632]. Since Sept. 11, the market has been flooded with programmers competing for the same jobs as me. This flood of unemployed programmers has allowed employers to become superpicky, asking for a specific skill set and a certain number of years in a specific industry. What's more, a single job might have three or more postings on a job site from different recruiters, creating the illusion that there are more jobs out there than there are. Another reason that it's difficult for IT workers to get jobs is that recruiters are ignorant of the ability to transfer skills from one technology to another.

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Software Buyer Beware

AS AN ex-Oracle staff consultant with 30 years' experience in large IT projects, I would have to place the blame for the situation described in the story "California Firestorm Threatens Oracle Deal" [QuickLink: 29683] primarily on the civil servants who, in my opinion, didn't do their homework and probably weren't qualified to do the needed homework. Oracle, like any software vendor, will sell as much as the customer is willing to buy. It's the responsibility of the buyer to "buy right," including negotiating a tight, cost-effective contract that includes all costs, such as systems integration, testing, training and deployment.

Ed Gardner
Web technologies and services director
San Jose

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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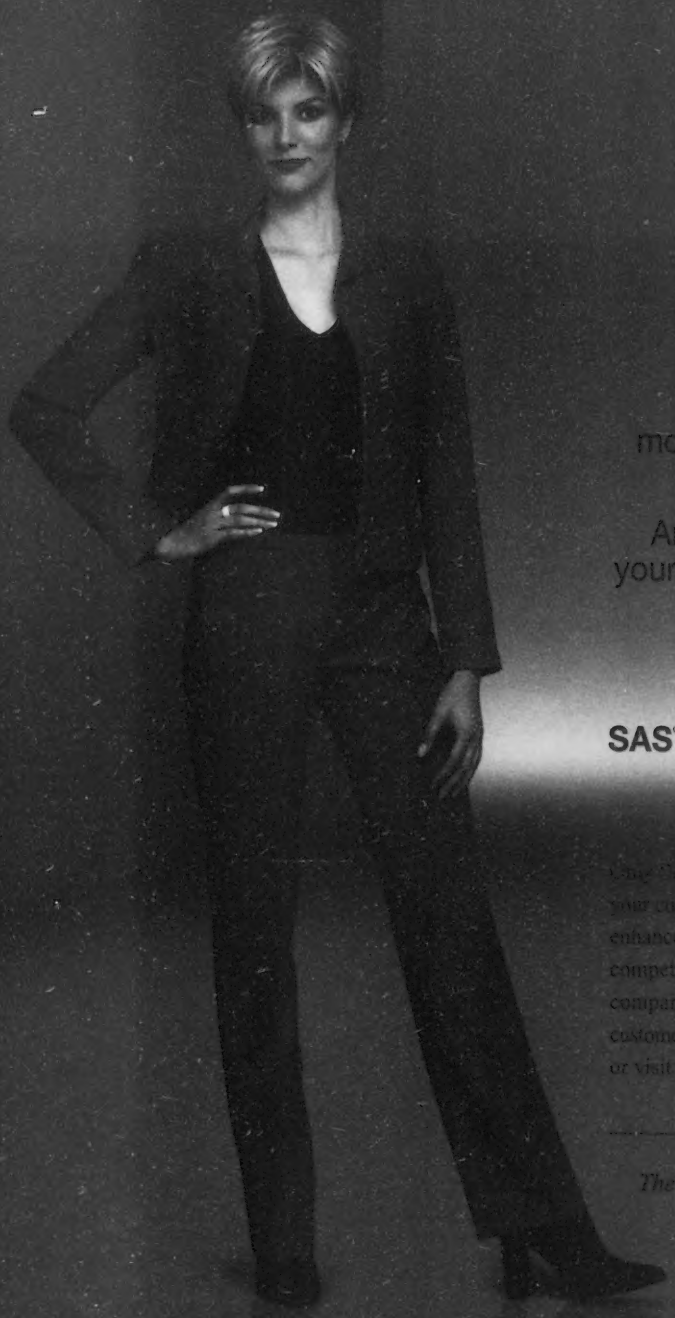

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THIS WEEK

SCHOOL DAZE

Computer science undergrads who are about to enter the workforce are getting a harsh lesson in market dynamics as they find themselves competing fiercely with veteran IT professionals for coveted positions. **PAGE 26**

JOHN SOARES

ETIQUETTE FOR ENGINEERS

Universities such as MIT are offering charm school programs to help teach students who are about to enter the workplace learn some useful social graces. **PAGE 30**

RETURN ON RENTALS

A growing number of companies are shifting to leasing mainframes and servers instead of buying them outright so they can upgrade more frequently and reduce upfront capital spending. **PAGE 42**

TITLE TURNABOUT

A-dec Inc., a maker of dental office furniture and equipment, has turned IT management on its ear by having its chief financial officer report to its newly minted chief of information. **PAGE 43**

CATHY HOTKA/PEER TO PEERS

Informal Education

SO SENIOR AND SO EXPERIENCED. Yet so stale.

Are you well versed only in technologies that are at least 10 years old? Do you spend all your time on ROI, depreciation and staff issues, only to find that your tech skills are toast?

It's tough for senior managers to stay current on technology, which will always be a moving target. Could you accurately describe Wi-Fi, SOAP, P3P or LDAP to a member of your tech team? The task can be overwhelming. For instance, a CIO pulled me out of a meeting two years ago and urgently whispered, "What in the world is XML?"

CATHY HOTKA manages the CIO Council for the National Retail Federation in Washington, and reads technical magazines for fun. She can be reached at **hotkac@nrf.com.**

To stay on top, senior IT people must use a variety of tools and practices to make sense of the ever-changing technology landscape and evolving management philosophies and business practices. There might not be time for formal classes, but the CIOs I've talked with prefer the following inexpensive yet effective methods of updating their knowledge:

- **See what your peers say.** There's no substitute for talking with colleagues regularly. Try to do this in person. Off-line communication is helpful, but it's no substitute for in-person advice from trusted friends. Ask about business DSL installations and watch your colleagues roll their eyes because they can't get carriers to respond to service orders; ask about VPNs and see how others are using them. Join an organized group of IT leaders either within or outside your company's industry.
- **Get out of your office and meet new people.** When you attend conferences, make the rounds at every cocktail party and networking opportunity. You may make lifetime friends and learn about technologies and practices that may not seem important now, but could be critical next year.
- **Chat.** Talk with others via e-mail or online communities. The answers to your questions may come from someone in a different industry.
- **Subscribe to online news services.** We all get electronic newsletters that clog our in-boxes. But savvy IT practitioners define preferences and ask for relevant content through e-mail. Look for such services from business publications.
- **Take business unit managers out to lunch.** For the price of a cheeseburger and a Coke, you can reap valuable intelligence about what's going on in key parts of your company. Business unit managers will also be happy to spill the beans on what technologies your company's competitors are using.
- **Use research services you've already paid for.** If you've coughed up thousands of dollars for subscriptions to research services, don't let those reports languish in your SUV's trunk. Read them, right in the office.
- **Use vendors as advisers.** Technology companies' sales and marketing people have to really understand core technologies before they can sell them. Ask these experts how the technologies work, who else has implemented them and what's coming in two or three years.
- **Shop the competition.** Some CEOs think that the coolest technologies are those in use at other companies. Call up their call centers, check out their Web sites or shop in their stores. See for yourself what your CEO might have read about in an airline magazine.
- **Get involved locally.** Many cities have groups of senior IT executives whose members share experiences and create ideas.
- **Read.** Many senior people read only business publications. Borrow a direct report's magazine and see what you've been missing.
- **Create the future.** Don't like the technologies you see? Define your destiny by forming a new interest group of cross-industry peers that can press vendors with what users really need.

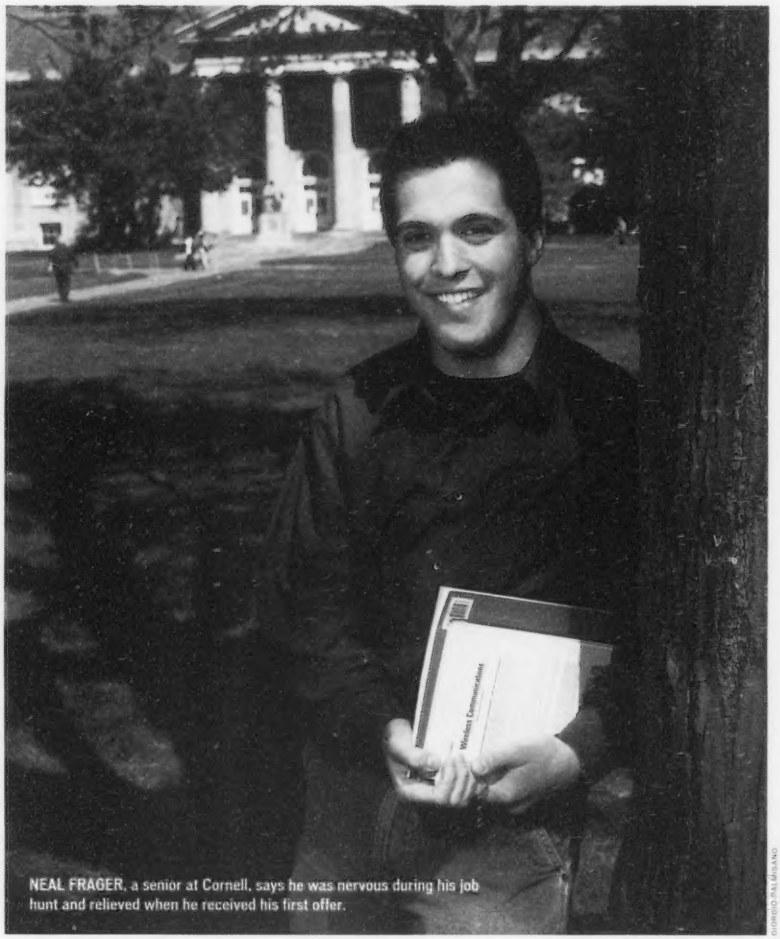
Staying ahead on technology is a battle that's never won. It means looking not to next year, but three years out. You'll be able to do that only if you constantly ask questions, get out of your office and talk to the change agents who are making a difference. ◗

EDITOR'S NOTE

Beginning today, *Computerworld*'s Business section will publish **Peer to Peers**, a monthly column written by an IT executive or manager. **Peer to Peers** will serve as a forum for IT leaders to offer advice or criticism, comment on industry events or discussions, raise issues or rally support. We hope you will gain insights, and we welcome your feedback. Please send your comments and questions to columns editor Rick Saia at **rick_saia@computerworld.com**.

Where the J

Entry-level IT candidates face a tough market, but there are opportunities out there if you look in the right places. **BY JULEKHA DASH**



NEAL FRAGER, a senior at Cornell, says he was nervous during his job hunt and relieved when he received his first offer.

GIORGIO PALMERA

CAMPUS to COMPANY

EVEN THE MOST TECH-SAVVY STUDENTS in the class of 2002 will need good marketing skills to land a job this year. In this slow economy, employers are selectively choosing their campus recruits — including entry-level IT applicants, says Camille Luckenbaugh, employment information manager for the National Association of Colleges and Employers (NACE) in Bethlehem, Pa.

"Recruiting for IT positions has diminished compared to previous years," says Lonnie Dunlap, director of university career services at Northwestern University in Evanston, Ill. Indeed, many firms are slashing their entry-level hires by 20% this year compared with 2001, according to a NACE survey of 230 companies.

Employers want a range of IT skills, from Web development to software programming and mainframe experience. And as students compete for jobs with their peers — as well as downsized IT workers — they'll also need good networking skills, relevant internships and smart job-hunting strategies.

Although IT spending has declined industrywide this year, companies still need "people to manage the systems and networks and develop applications in a company's IT department," says John Challenger, CEO of Chicago-based outplacement firm Challenger, Gray & Christmas Inc. Challenger says hiring managers are looking for IT workers who can develop and manage enterprisewide e-commerce and customer relationship management (CRM) applications.

Helen Anderson, a computer consultant at American Management Systems Inc. in Fairfax, Va., who graduated in 2000 from the University of Virginia in Charlottesville, agrees that experience working with Java and CRM applications is a big asset.

For its part, Northbrook, Ill.-based Allstate Insurance Co. needs software developers who are proficient in C, C+ and C++, as well as Cobol programmers and systems analysts, says senior IT manager Lorraine Balun.

Charlottesville, Va.-based SNL Securities LLC will hire four or five entry-level IT graduates who have a mix of Web development, Web design and technical support skills, says Barbara Kessler, human resources director at the financial publishing firm. "Some accounting knowledge, such as a class or two," is a big plus for someone who wants to work at a financial services firm, she says.

As companies extend fewer offers to computer science graduates this year, students with relevant internship experience will make a greater impression,

say employers. A student applying for a position at Fairfax, Va.-based SRA International Inc. should ideally have had an internship at an IT consulting firm or a government contractor, says Amanda Schutz, college recruiting manager at SRA. The IT services firm provides systems integration and consulting services primarily to government agencies.

"If they liked [the internship], then there is a good chance they'll like it at SRA," she says.

Schutz says that SRA will hire 10 college graduates this year, compared with 20 last year. Most of these new recruits will be computer science, electrical engineering or information systems majors, says Schutz, who adds that her firm needs employees with well-rounded technology skills, including hands-on experience with several programming languages, such as Java and C++.

"Most of our contracts are with the government and involve a little bit of everything" in IT, she says, adding that new hires "start with one project and move around the company."

At Oakland, Calif.-based Kaiser Permanente Health Plan Inc., most of the available entry-level IT positions are in the help desk and technical support areas, says Matt Capaci, college and diversity project manager for the company's IT division. Capaci couldn't say how many graduates Kaiser Permanente will add to its 4,000-person IT staff this year.

Downwardly Mobile

Those students lucky enough to land job offers are seeing lower salaries and fewer perks compared with last year. According to NACE, the average salary offer for a computer science graduate has dropped 3.6% this year (see chart at right).

Lockheed Martin Corp. is "not losing as many students to inflated offers" from competitors this year, says Teri Matzkin, lead recruiter for the Bethesda, Md.-based aerospace and government contractor. While salaries remain "competitive," the company doesn't need to extend other perks — such as signing bonuses — to entice the engineering students it wants to hire, she says.

The economic slowdown forced the company to slash its original college hiring projection in the Washington metropolitan area by 40%, from 227 students to 142, Matzkin says.

Students have been forced to become less picky about quality-of-life issues such as location. In the past, enticing entry-level IT graduates to move to Charlottesville was a problem for SNL, says Kessler. "For someone in a bigger city, coming to Charlottesville is not on their to-do list," she says. And many graduates from the University of Virginia shunned the idea of remaining in the town of 40,000, she says.

But thanks to the soft labor market, SNL can now draw from a more talented pool of students, says Kessler, who recently waded through more than 100 résumés. "It's a good problem to have," she says.

College seniors and recent graduates recall the not-so-distant past when employers tried to outbid one another to lure IT students.

Two years ago, students "just had to show up for interviews" to find a job, says Neal Frager, an electrical and computer engineering major at Cornell University in Ithaca, N.Y.

Now computer science and other technology majors express fear and anxiety over their job search. "I was nervous last semester and relieved when I got my first offer," says Frager, who accepted a job in technical sales and marketing at Dallas-based Texas Instruments Inc.

Not everyone has been so lucky. After interviewing with about a half-dozen companies, Mike Peoples, a senior majoring in computer science at the University of Pennsylvania, has yet to find a job. When he follows up with employers to find out why he wasn't hired, Peoples says he doesn't get "much of an answer."

Marketing Savvy Required

One reason students are having a tougher time finding work is because their job rivals include not only other seniors, but also recent graduates who were laid off from their first jobs, says Challenger.

Because they're competing for fewer positions, students need a bit of marketing savvy to find work. Students who just "want any job and are not focused on what they want are having more trouble" finding work, says Frager. Companies want to see whether the job candidate will be happy working for the company, since recruiters figure that "if you're happy, then you're more motivated," he says.

Talking about extracurricular activities will help make an impression with recruiters, says Frager. "This allows the recruiter to remember you if he has seen a hundred people in one day," he says. For instance, Frager has listed rock climbing and tennis among his interests on his résumé.

Students should also employ a variety of job search techniques and not limit themselves to just one method, says Dunlap. In addition to interviewing with employers on campus, students should join professional organizations, such as the Association for Women in Computing in San Francisco or the Association of Information Technology Professionals in Park Ridge, Ill., and contact employers directly, according to Dunlap.

Challenger warns students not to rely too much on the Internet for their job searches because it limits critical face-to-face contact. "Sending your résumé [by e-mail] and searching the Web is not the best way" to find a job in a tough climate, he says.

Instead, Challenger stresses the need to network and make use of existing contacts.

"You need to go out and see other graduates [with jobs] and professors and people in business. See everybody who graduated from your school in the last five years in your area. Most likely, they will be open to seeing you," he says.

Dash is a freelance writer in Lewes, Del. Contact her at mail@julekhadash.com.

SLIDING SALARIES

MAJOR: LOGISTICS/MATERIALS MANAGEMENT

AVERAGE OFFER: $39,828

DROP FROM LAST YEAR: 12.3%

JOB OFFERS: A decrease in the number of available consulting and systems engineering positions accounts for the large salary drop. Those jobs average higher salaries than the management-trainee positions that are being offered this year.

MAJOR: COMPUTER SCIENCE

AVERAGE OFFER: $50,352

DROP FROM LAST YEAR: 3.6%

JOB OFFERS: Many offers have been for software design positions that average $54,922. Computer systems design firms, government agencies and aerospace employers have shown the most demand for people to fill these positions.

MAJOR: ELECTRICAL ENGINEERING

AVERAGE OFFER: $50,387

DROP FROM LAST YEAR: 3.5%

JOB OFFERS: Positions in design engineering, hardware design and development, and systems engineering account for many of these job offers.

SOURCE: NATIONAL ASSOCIATION OF COLLEGES AND EMPLOYERS, BETHLEHEM, PA.; APRIL 2002 SURVEY OF 230 COMPANIES.

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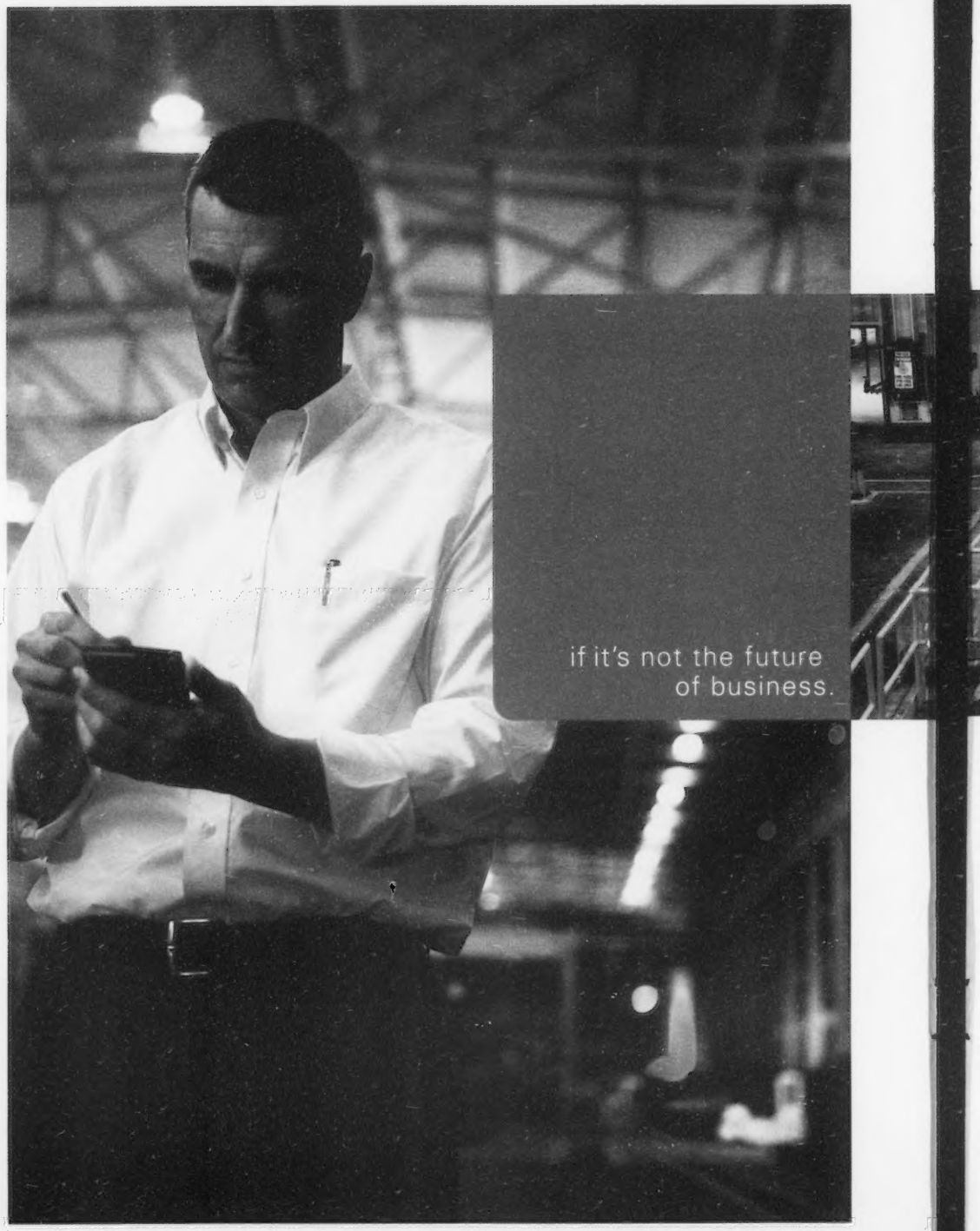
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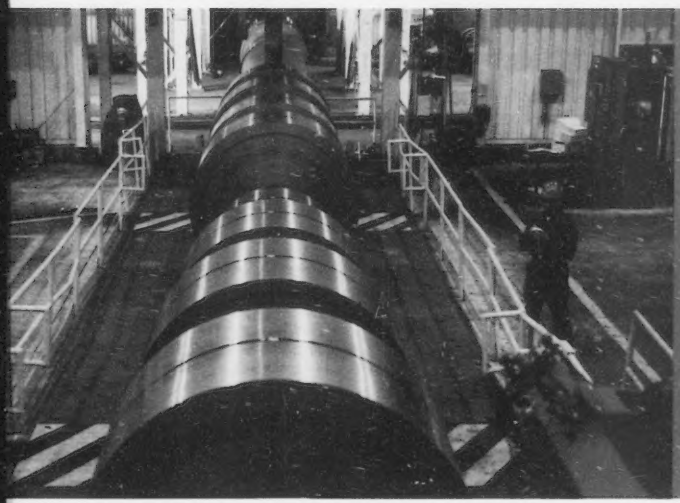

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Miss Manners Meets MIS

Schools such as MIT are teaching future IT professionals the finer points of small talk and style savvy. BY MELISSA SOLOMON

CAMPUS to COMPANY

THERE WAS A TIME when women wore ties. Not anymore. That stays in the '80s.

The style-savvy instructor uses her pointer to illustrate various fashion faux pas. "Never, ever wear white socks with black shoes," she states emphatically.

"Apparently, I need a little help," jokes Todd Thompson, a third-year MIT graduate chemistry student, gazing down at his black shoes and white socks. "And my belt doesn't exactly match my shoes."

Chances are, Thompson's belt/shoes combo won't make or break his career. And many of the courses offered at MIT's annual Charm School — created in 1993 as a way for the school to poke fun at its reputation as a haven for brainy nerds — are clearly just for laughs. But as today's corporations push for ever-improving customer service and expect IT professionals to spend increasing amounts of time with end users and external customers, MIT's daylong program has evolved to offer students some practical lessons in social skills that are likely to come in handy as they enter the job market.

"I think they should mandate Charm School," says Thompson. "They should add a personal hygiene booth."

MIT's Charm School is one of a growing number of programs that, while presented in a lighthearted fashion, are geared toward raising future IT workers' awareness of the need to hone their soft skills, such as communicating with users and working on a team. At several Philadelphia-area colleges and high schools, for instance, workers from Lockheed Martin Corp. teach business etiquette courses to students [QuickLink: 29941]. And as IT becomes ever more closely aligned with core business strategies, even technology veterans are lining up for social development courses. Workers at Woburn, Mass.-based Genuity Inc. and Boston-based Fidelity Investments, for example, have taken "Teaching Techies to Talk," a program offered by New Castle, N.H.-based Loyalty Factor LLC.

"There really is a need for it," says Calvin Sun, principal of Paoli, Pa.-based consultancy Calvin Sun & Associates, which has taught IT charm school classes at companies such as Philadelphia Gas Works, Triton PCS and Potomac Electric Power Co. Just last month, he taught the classes at NStar, a Boston-based energy distributor whose CIO has been focused on making the IT division more customer-centric since he was hired last fall after a series of high-profile and controversial blackouts [QuickLink: 27158].

"IT people have to deal with nontechnical people all the time . . . [and] they either use jargon and totally confuse the person, or they talk down to the person and insult their intelligence," says Sun. "They're so intent on solving the technical problem that they forget to acknowledge that the customer is frustrated by the technical problem."

The Skinny on Soft Skills

Just glancing through MIT's Charm School agenda — with courses on topics such as small talk and attentive listening, table manners and connecting with alumni — gives Gil Alterovitz, a second-year health science graduate student, an idea of some of the things he should be paying attention to as he gets ready for the business world.

"As a graduate student, you might be isolated in a lab, so you don't really need [social graces] here. But outside, it's important," Alterovitz explains, after asking the accessories instructor, Sharon Shamir, if it's acceptable to wear a turtleneck under a sweater. "Normally, it would be embarrassing to ask people, but here, it's OK."

While Alterovitz's inquiry is geared more toward pleasing his girlfriend than a potential employer, he says he's picked up a few valuable lessons at Charm School.

For instance, he learned from the body language session that 60% to 80% of the messages you send are through nonverbal communication. So you might say something, but if you don't look convinced that what you're saying is right, it will be hard to get your point across to co-workers or prospective employers.

Alterovitz is on the right track. Robert Bowman, information manager for Stamford, Conn.-based Xerox Corp.'s developing markets and integrated supply chain division, says communication skills are something he always looks for in new hires.

"Today, a lot of the IT youngsters come out of school with a lot of good school background but not a lot of business knowledge," he says. "Technical competence is outstanding, but if they can't apply it to the business process, they're really limited."

In interviews, Bowman asks students to tell him about times they worked with others to develop solutions. They could be classroom projects or group papers, work experiences or volunteer activities, he says.

Diplomacy is a soft skill that Sharon Karackattu, a second-year MIT biology graduate student, says is critical for the workplace. At Charm School, sessions such as "Working With People You Really Need in Life" or "How to Tell Somebody Something They'd Rather Not Hear" offer students tips on navigating their way through some of the touchier aspects of the business world.

Allison Hemming, president of New York-based recruiting firm The Hired Guns, says one of the most common turnoffs for hiring managers and recruiters is young IT workers who feel that they're doing companies a favor by interviewing with them.

"Confidence in your abilities — you have to have that when you go out on an interview," she says. "But there's a fine line between that and entitlement."

Hemming also suggests videotaping mock interviews with friends and then watching them to see which areas could use improvement.

Luc LaFontan, vice president of corporate technology at New York-based About Inc., suggests that students go to actual interviews for practice. "The advice that I wish someone had given me was you should go on 20 interviews at places that you don't want to work before you go on one where you do want to work," says LaFontan.

Plenty of students break basic social rules, such as keeping cell phones on during exams — and answer-

ing them, says Simon Lawrence, an MIT senior majoring in electrical engineering and computer science. One Charm School course, called "Exemplary Locomotion," is a must at MIT, he says. It teaches students how to walk, which might seem like a given, but many students start to hunch forward after trudging around campus with multiple laptops in their knapsacks, he explains.

Problem is, the students who are most in need of charm school classes aren't likely to sign up for them, says Laura Noren, a senior comparative media studies and architecture major. "If you still have four laptops in your bag, you're probably in the lab," Noren says.

Many of the students at MIT's Charm School see it as no more than a goofy way to spend a rainy Friday afternoon. They attend their courses with gusto, collecting their credits from instructors so they can earn a bachelor's, master's or doctorate's degree in charm, but they're not really expecting to pick up too many life lessons.

"I don't know how practical it is," says Leah Schmelzer, a senior math major watching the session on how to tie a bow tie. "Some of it's fun, and some of it, you're like, 'OK.' "

When asked what made him and his friends trek to the student union for Charm School, Chris Roberts, a first-year technology and policy graduate student, flashes his savviest smile. "We want to become charming. Is it working?" he asks with a wink.

Despite the stereotype of MIT bookworms, Roberts says he's been pleasantly surprised by the emphasis on working with and giving presentations to other students.

"Technical skills should be a given," Roberts says. "But you need to be able to communicate that to work on a team."

Kelly Han, a freshman majoring in brain and cognitive science, had no problem communicating her excitement as she stood atop a bench, whooping it up for her schoolmates as they strutted their stuff on the catwalk during the Charm School business fashion show. It was the final event before MIT President Charles M. Vest, clad in a hard hat bearing the school's logo, conferred Charm School degrees on students, following, of course, a kazoo rendition of "Pomp and Circumstance."

"It's my first doctorate," says Han, who learned how to tip a maitre d' and to pass the salt counterclockwise in her classes. "It feels good. It was a lot of hard work, though."

JOB HUNT ETIQUETTE 101

1. **It may require some extra legwork,** but make sure to personalize the salutation in your cover letter, says Allison Hemming, president of recruiting firm The Hired Guns.
2. **Hone your administrative skills,** even if it means working in Mom or Dad's store for a while, says Luc LaFontan, vice president of corporate technology at About.com.
3. **Take advantage of your alumni network,** but don't expect a stranger to help you off the bat, says Hemming. Start with an e-mail or letter asking for an informational phone interview.
4. **Demonstrate your eagerness** to learn and grow on the job, says Robert Bowman, an information manager at Xerox. Don't expect your first job to be in management.
5. **Dress at least one step up on interviews,** erring on the side of formality, says Hemming. So if everyone in a company wears khakis, wear a sports jacket. If everyone wears sports jackets, wear a suit.
6. **Try to take summer jobs** in your discipline to show your commitment to IT, suggests Bowman.
7. **Create a job-searching group with friends,** where you share ideas about résumés, cover letters and interviews.

PHOTOGRAPHS BY JOHN SOKOL

MIT'S ANNUAL ONE-DAY CHARM SCHOOL pokes fun at the college's reputation for turning out brainy nerds. But it also offers practical lessons in areas such as wardrobe and social etiquette that may come in handy for job-seeking graduates.

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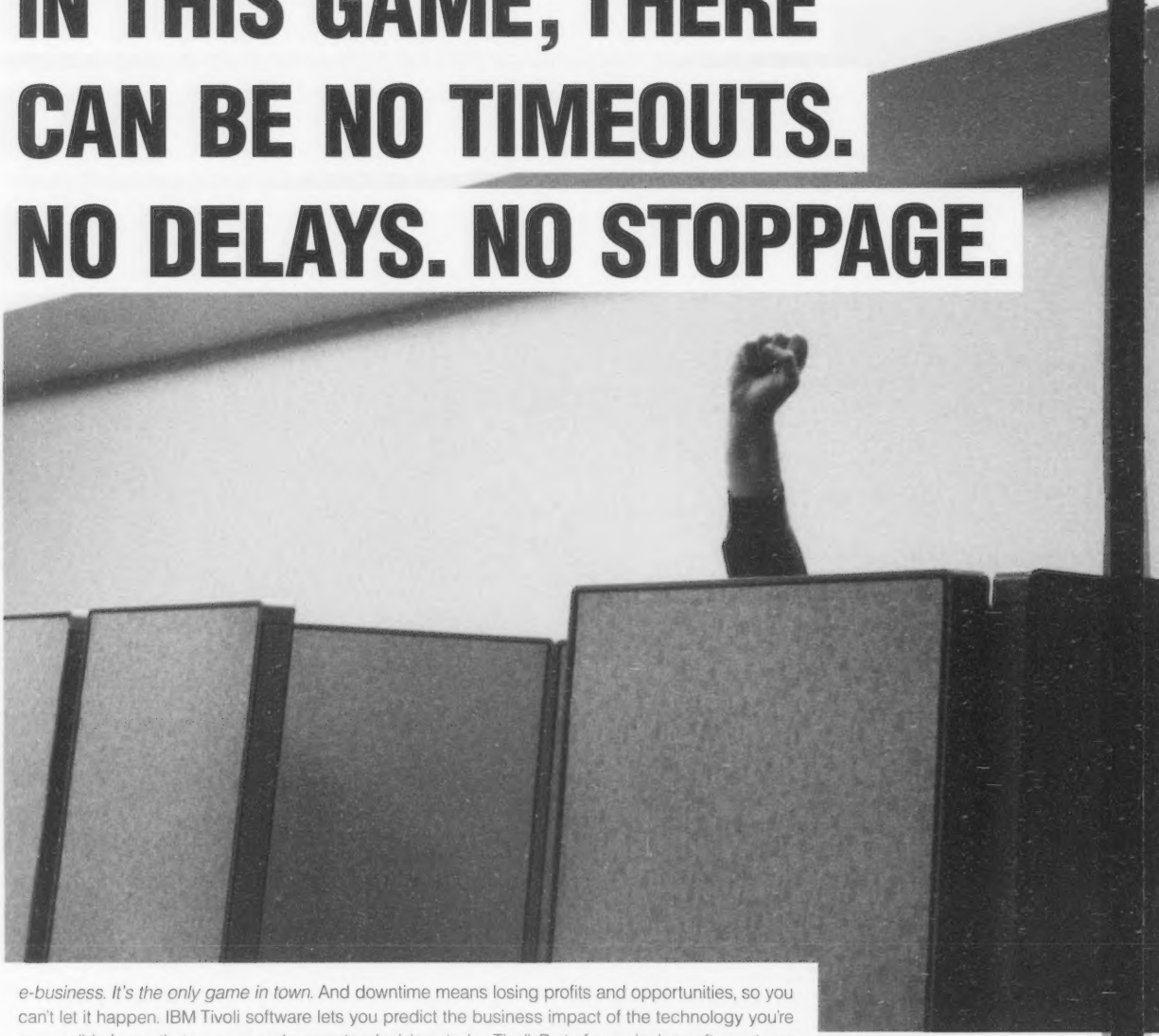

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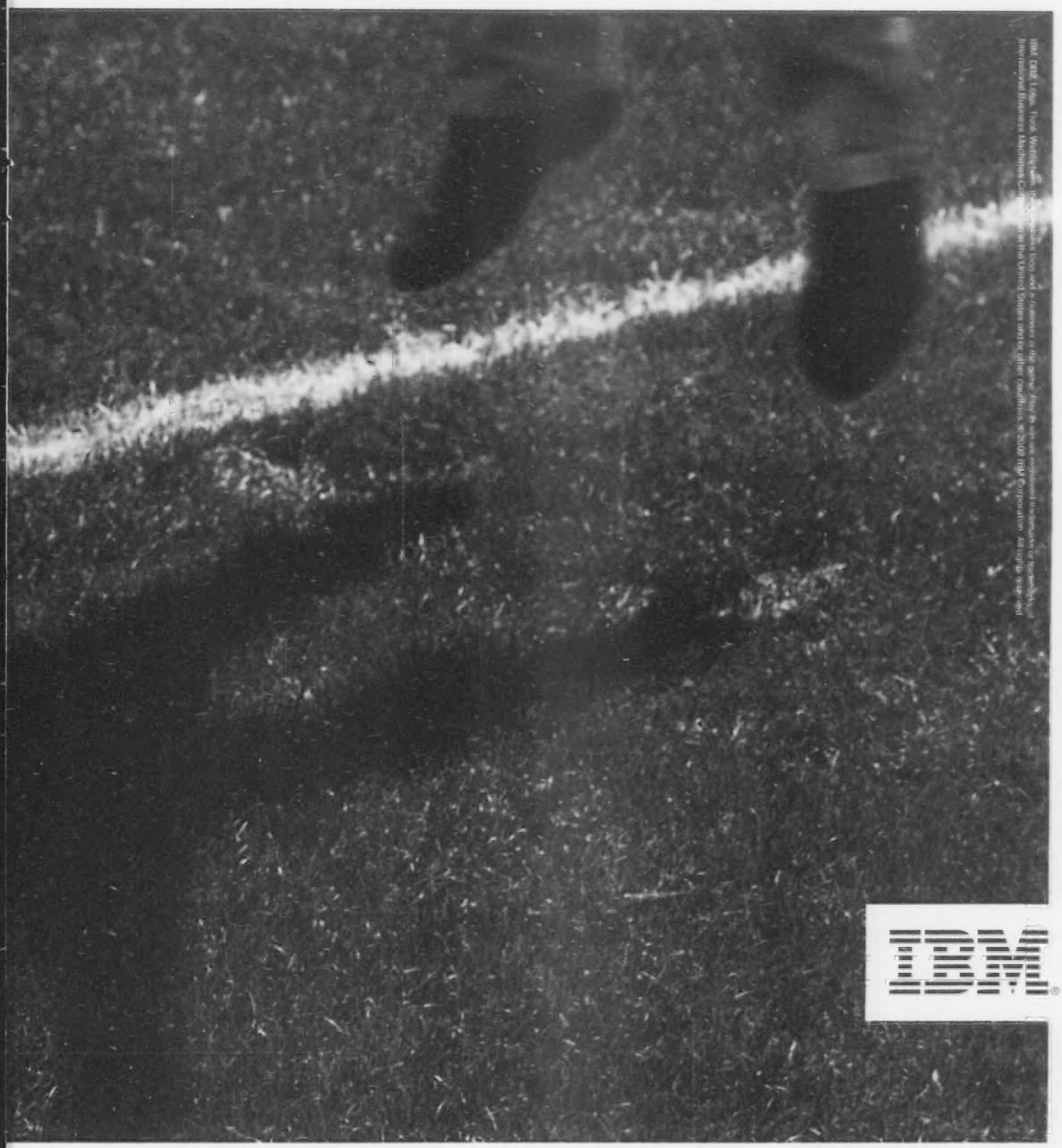

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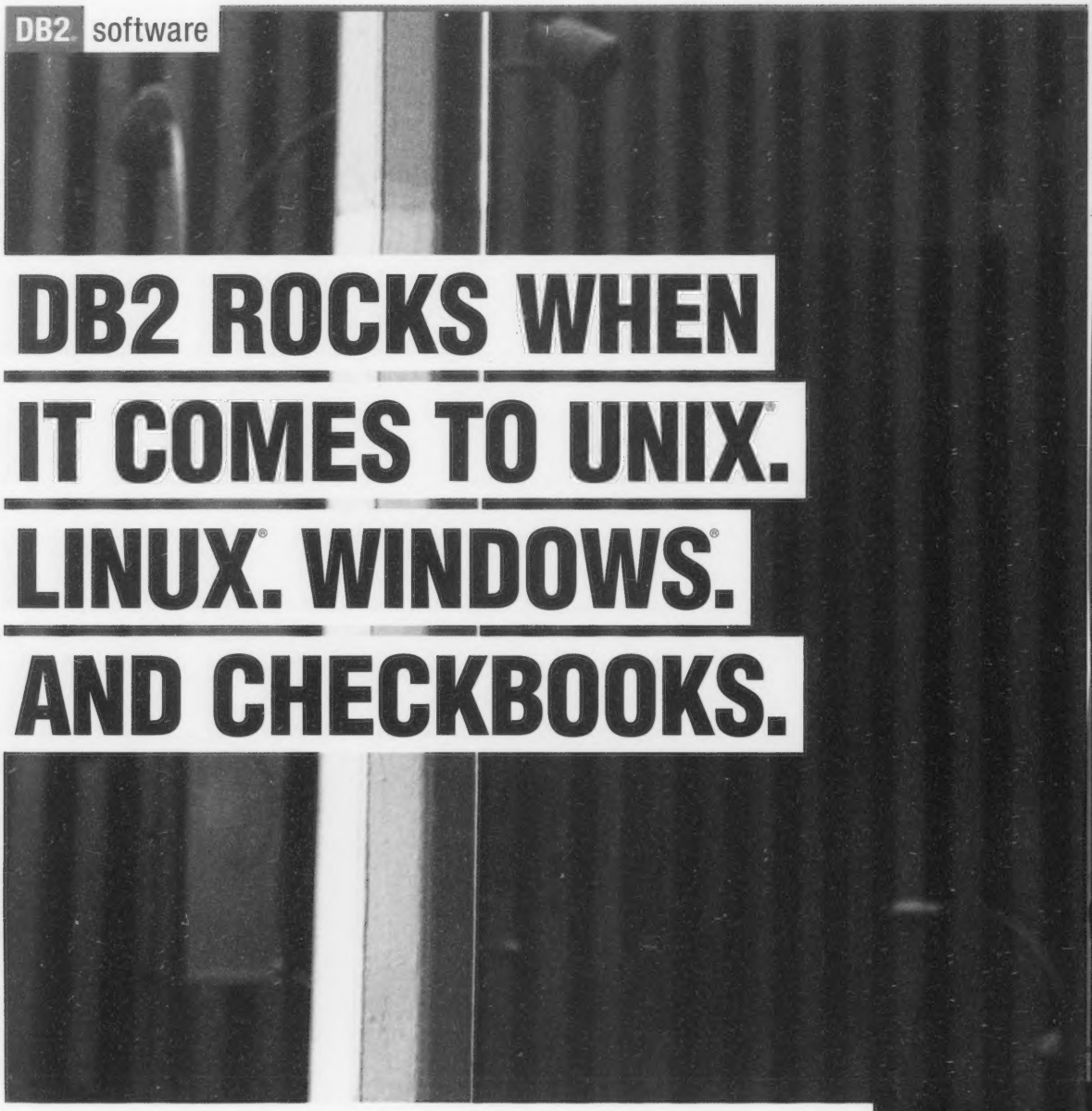

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At the height of the dot-com frenzy, employers were throwing cash, bonuses and other goodies at college grads. Welcome to the grim economy. **BY TED SMALLEY BOWEN**

Market Blues

IT'S TOUGH TO COUNSEL patience to eager young people who are steeped in confidence-boosting career advice, their ears ringing with praise. It's tougher still when they came of age in boom times.

All the same, college seniors and master's candidates aiming for IT jobs face a much less welcoming employment scene than their predecessors did just two years ago.

It wasn't so long ago that high-flying dot-coms and even Old Economy players from all corners were tossing fat salaries and hefty bonuses at tech-savvy students. But now, current degree candidates are getting a lesson in the virtues of networking and internships.

CAMPUS to COMPANY

To be sure, fewer entry-level IT candidates spent their spring break sifting through piles of offers.

MIT senior Carlos Armando Garcia, who landed a job at New York-based Merrill Lynch & Co.'s technology group in November, noticed a steep drop-off in employer attendance at campus job fairs. Most notably absent have been venture capital-fueled start-ups, leaving the field to larger, established companies, according to the electrical engineering and computer science major.

A year or two ago, "about 80%" of the companies at MIT's job fairs "were software-related companies, start-ups or medium-size companies looking for programmers. They were offering salaries between $60,000 and $100,000. Now, the best salary you can get for an undergraduate is about $55,000," says Garcia, who hooked up with Merrill Lynch at an on-campus technical presentation given by the company.

"There are always opportunities out there, but it's taking longer, and students have to try harder," says Jan Kendall, a career counselor at Boston University who works in BU's science and engineering programs. "Two years ago, strong candidates were getting five and six offers and signing bonuses. Now, it's not at all like that."

Indeed, recruitment is down from its recent peak of 1999 and 2000, says Kendall. "Last year wasn't the greatest, and this year is worse," she adds.

Top or Bottom?

Whether the economy is near the end of a downslide or the beginning of a recovery, it's clearly in low gear. Consequently, IT jobs once thought to be in endless supply are harder to come by.

According to a survey conducted last month by the National Association of Colleges and Employers (NACE) in Bethlehem, Pa., companies across the board expect a 36% drop in their hiring of new graduates from all bachelor programs this year.

Among employer types covered in NACE's winter 2002 salary survey, computer systems design, consulting and programming ranked 16th in terms of the number of job offers, down from 5th in 2001. The category's average starting salary offer also fell from $47,599 in 2001 to $46,208 in 2002.

People who hold master's degrees generally step higher onto the IT ladder, given their skills, but they face similarly diminished prospects.

The tight economy means more students are opting to stay in school, which allows them to forestall loan payments and bolster their skills. MIT's popular five-year master's program in electrical engineering and computer science saw a spike in interest from undergraduates looking to stay on this year, according to Garcia.

While the economic slump doesn't change the basic skills required to land work, candidates can gain an edge if they meet employers' demands for technologists who can put IT into business context.

Organizational skills are at the top of employers' IT department wish lists, according to a survey by Cambridge, Mass.-based Forrester Research Inc. "By far, project management is top. It's been an issue for years," says analyst Tom Pohlmann. Strategic thinking and planning ranked No. 2 among the desirable skills sought by IT managers, Forrester says.

During the slump, Columbus, Ohio-based financial services giant Nationwide has reduced its hiring of new graduates and is relying more on its college internship program, according to Carolyn Highley, a senior recruiter in the systems departments at both Nationwide Insurance Co. and Nationwide Financial Services Inc. Still, the company hasn't trimmed its internal training programs or tuition reimbursement, she notes.

And, as internal staffers move up, the IT pipeline will continue to be open. "With a company as large as Nationwide, we're going to constantly need new people; we just don't need them in the large numbers that we did before," says Highley.

Favorable Figures

Despite the doom and gloom of the high-tech meltdown, the long-term demand for IT labor remains solid. Of the departments covered in Forrester's report on white-collar personnel management, IT recruited the most and still cited a shortage of qualified candidates, indicating healthy long-term demand.

According to statistics from the U.S. Department of Labor, the U.S. workforce is expected to reach nearly 156 million by 2010, gaining roughly 22 million jobs. Computer and data processing services look to account for about 1.8 million of that increase, growing at a strong 86% clip, according to the Bureau of Labor Statistics.

Bowen is a freelance writer in Boston. Contact him at ted_bowen@hotmail.com.

OCCUPATIONAL STAMINA

Despite the current down market, many occupations with the highest projected growth are in computer-related fields (in thousands).

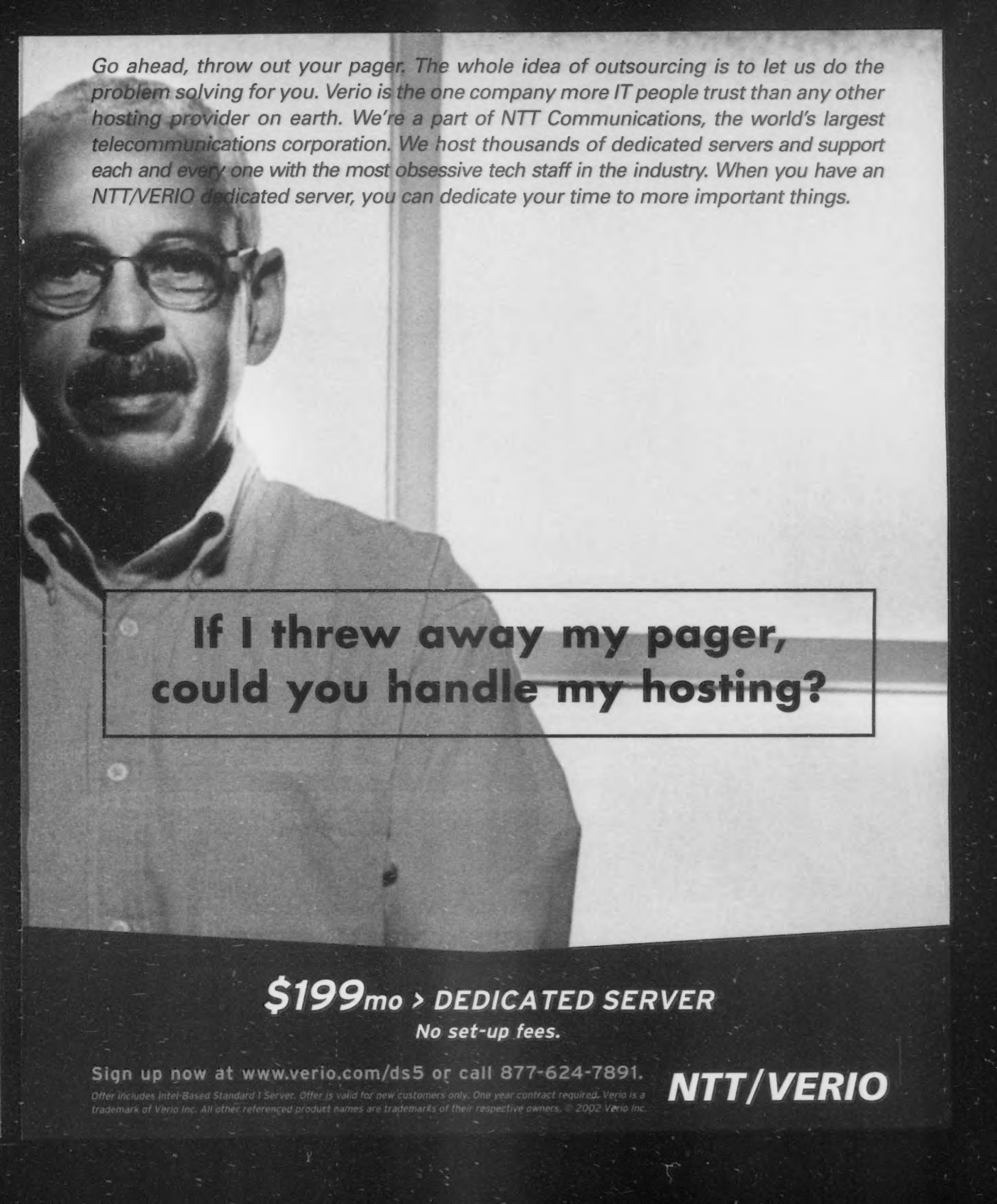
BASE: Employment growth from 2000 to 2010 in selected occupations, usually requiring a bachelor's degree or higher plus work experience.

SOURCE: *OCCUPATIONAL OUTLOOK QUARTERLY*, WINTER 2001-02

JOB CONNECTIONS

For a listing of various job boards, IT employment Web sites and other related sites of interest, please visit our Web site:

QuickLink: 29745
www.computerworld.com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Leveraging Leasing

In tough times, a growing number of companies are turning to leasing hardware to spread their costs out.

By Barbara DePompa Reimers

BUSINESSES ARE INCREASINGLY leasing hardware as a way to reduce upfront capital expenses while still investing in new technologies to keep pace with their growing competitive needs.

The Equipment Leasing Association's (ELA) fourth-quarter 2001 "Performance Indicators Report" (PIR) reveals an increase in new business leasing volume of almost 13%, compared with the same period in 2000. First-quarter 2002 leasing figures, scheduled to be released this month, also look strong, based on preliminary returns, according to officials at the Arlington, Va.-based ELA. IT leasing makes up about 15% of all types of equipment leasing.

Customers say the benefits of leasing from hardware suppliers directly include regular technology upgrades and less finger-pointing, since the vendor is the single point of contact on both equipment and contract issues. The primary drawbacks are the lack of control associated with not owning the technology and being tied to a single vendor.

Analysts and IT managers agree that leasing hardware can reduce financial roadblocks to investing in big-ticket IT projects (such as enterprisewide customer relationship management or enterprise resource planning efforts) by spreading out costs over a few years or even skewing them toward the back end of a project instead of swallowing the cost all at once.

In mid-2001, ADP Brokerage Services Group, a division of Roseland, N.J.-based Automatic Data Processing Inc., faced such a challenge, which it recently resolved with help from IBM.

Typically, it's cost-prohibitive for a business to replace leased servers. The lease must be paid off in full before new equipment can be purchased or leased. But reliability problems on a variety of Web applications prompted Dennis Noto, ADP's vice president of processing services, to shop around for a new system with better performance and higher availability. So ADP tapped IBM, which settled four leases for servers from Sun Microsystems Inc. and storage equipment from EMC Corp. and other vendors. Then IBM replaced ADP's old equipment with its own pSeries/Shark hardware.

Through the arrangement with IBM, ADP has decreased its monthly lease expenses by 25% and gained three times the performance of the previous systems, says Noto.

Off the Books

Companies typically take advantage of leasing to get costly hardware assets off the books, says Ralph Petta, vice president of industry services at the ELA. IT hardware is the most popular leased item after transportation equipment because it depreciates and becomes obsolete faster than other assets, he says.

"It makes sense for companies to lease IT assets from finance companies and take advantage of regular upgrades," as opposed to determining how to get rid of older equipment or interrupting business operations to shift to new servers, Petta says.

The financial problems besetting third-party lessors such as Comdisco Inc., which has filed for bankruptcy protection, may have some managers concerned that the leasing industry is shriveling away. While the industry's situation isn't that dire, independent lessors have suffered because "as product cycles have accelerated, it has become increasingly difficult for these lessors to profitably resell 3-year-old leased technology," says Rob Schafer, program director at Meta Group Inc. in Stamford, Conn.

But that doesn't mean leasing isn't popular. "We decreased our hardware costs by 70% and increased our server capacity by 30%" over the past year, thanks to a new leasing arrangement, says Dan Agronow, vice president of technology at Weather.com in Atlanta. Weather.com switched from a Sun Solaris platform to an IBM/Intel environment running Linux and WebSphere.

In the beginning, Agronow replaced about 12 big database servers (Sun 45 Servers that cost about $50,000 each) with 22 less-costly NetFinity servers (at about $7,500 each) and got the same performance for $435,000 less. The company now leases multiple IBM xSeries servers running database, content, image, Common Gateway Interface and Web-logging applications.

LINKS TO LEASING

To visit sites that offer more about the advantages and disadvantages of leasing IT equipment, go to:

QuickLink: 29715
www.computerworld.com

The potential disadvantage of being locked into a single vendor doesn't bother Noto or Agronow. Says Agronow, "I have no worries about what to do with older technology, and the homogeneous environment is much easier to manage than a heterogeneous environment."

DePompa is a writer and editor in Germantown, Md. Contact her at bdepompa@aol.com.

Choosing a Financing Provider

VENDOR LESSORS (IBM, HP, EMC AND OTHER TECHNOLOGY MANUFACTURERS)

PROS: These lessors are most familiar with the vagaries of IT leasing, including software and services.

CONS: With the exception of IBM Global Financing Services, which has $40 billion in assets, few of these lessors possess the resources to finance hardware, software and services, and often subcontract to third-party lessors. Those handoffs can result in more finger-pointing and confusion and less direct contact with the hardware manufacturer.

SERVICES PROVIDERS (EMC, COMPUTER SCIENCES CORP. AND SOME OF THE BIG FIVE ACCOUNTING FIRMS)

PROS: They possess a strong focus on the service segment of an IT project.

CONS: They can have relatively inflexible terms and conditions.

FINANCIAL SERVICES INSTITUTIONS (GE CAPITAL CORP. AND OTHERS)

PROS: These providers have deep pockets, aggressive rates and initial negotiating flexibility.

CONS: Most possess limited IT-specific expertise because, typically, they are generic financing organizations.

COMMERCIAL BANKS

PROS: They offer loans to all kinds of businesses.

CONS: These providers are usually the least attractive, because they're considered conservative, non-IT-focused generic lessors, typically with less-aggressive rates and inflexible terms and conditions.

SOURCE: ROB SCHAFER, PROGRAM DIRECTOR, META GROUP INC., STAMFORD, CONN.

Alphabet Soup: CIO Becomes COI, Starts Supervising CFO

A-dec has turned its management structure on its ear

BY MARK HALL

No matter what anyone says, titles matter. They send a message about the job — and the person doing it.

"If you've got a CIO title, people think you're a computer guy," says Charles Cook, vice president and general manager at A-dec Inc. in Newberg, Ore. But the maker of dental office furniture and equipment wanted an executive to oversee more than just IT. "We want someone to identify and streamline all of our information needs. That's why the title is chief of information," says Cook.

The new position, created in a companywide reorganization in February, puts Keith Beardon, A-dec's former CIO, in the unique role of COI.

"I've seen CIO titles, of course, but not COI," observes W. Scott Sherman, a professor at the Graziadio School of Business and Management at Pepperdine University in Culver City, Calif. "It's clearly a title that means information means something special to the company."

Cook underscores that point. "We want to keep the reality of information's importance to the business in the forefront," he says.

To that end, as part of the reorganization, Cook has A-dec's chief financial officer reporting to Beardon, a structure that Sherman says he's never seen before.

But Cook, who is the sole executive reporting to the company's owners, has specific reasons for putting his CFO under the COI, who is now on par with Cook's other direct reports — including the vice presidents of manufacturing, human resources, sales and product development.

BEARDON: A-dec's chief of information.

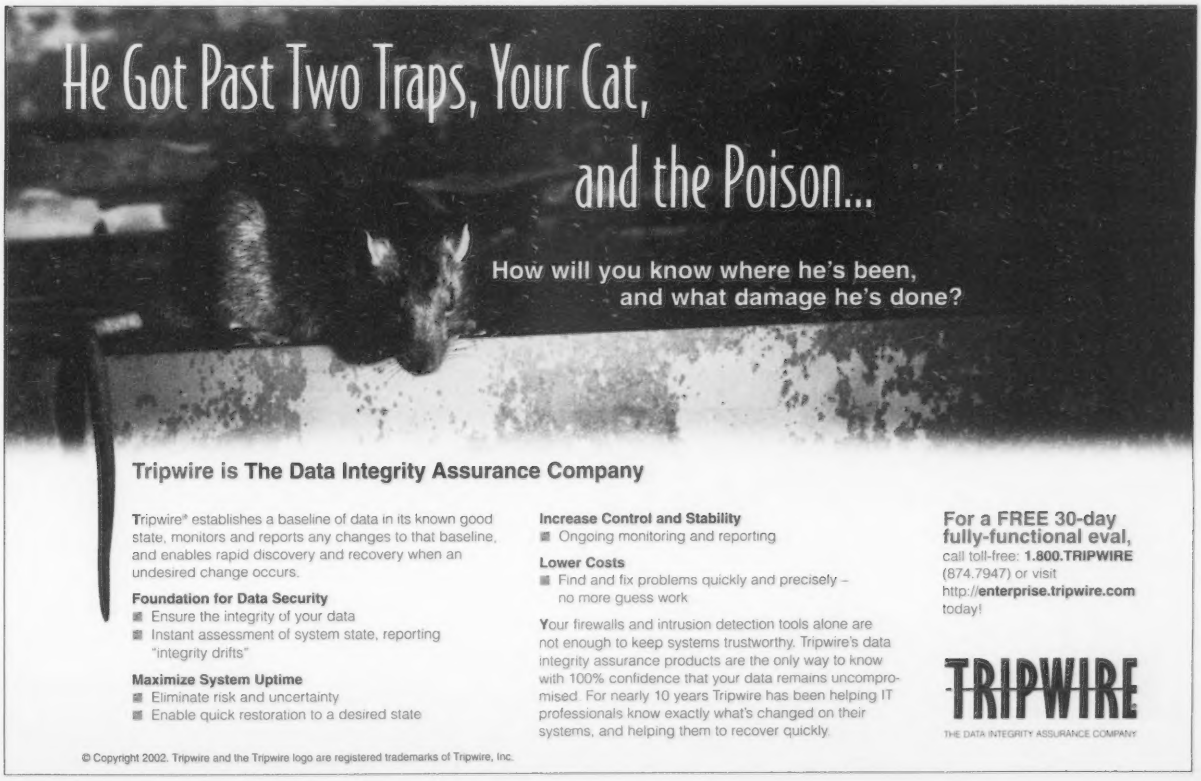
A-dec is privately held, and at a privately held company, the CFO doesn't have treasury duties — such as filings with the Securities and Exchange Commission — that a public-company CFO would shoulder, says Cook. But he also points out that "financial information is just that: information. It's used to make decisions like manufacturing or sales-order information."

CFO Alan Steiger says he's happy with the choice of Beardon as his boss. Steiger, who had been on a peer level with Beardon, says he's looking forward to redesigning some of the IT reporting systems for finance to help improve A-dec's budgeting process.

Beardon says he and Steiger "have a great working relationship, and what he is looking to me for as a boss is really the strategic direction of how information fits into the company and more specifically where financial information fits."

Cook considers the new position a tough one. "Keith's challenge will be to understand our information needs in totality and how to get information in and out of the right departments in an economic and complete way," he says. "He needs to look at information holistically in the way we run the business."

Cook says that Beardon was right for the job because he has "proven auditing skills, which will come in handy" for looking at how different department data silos can relate to one another. ▶



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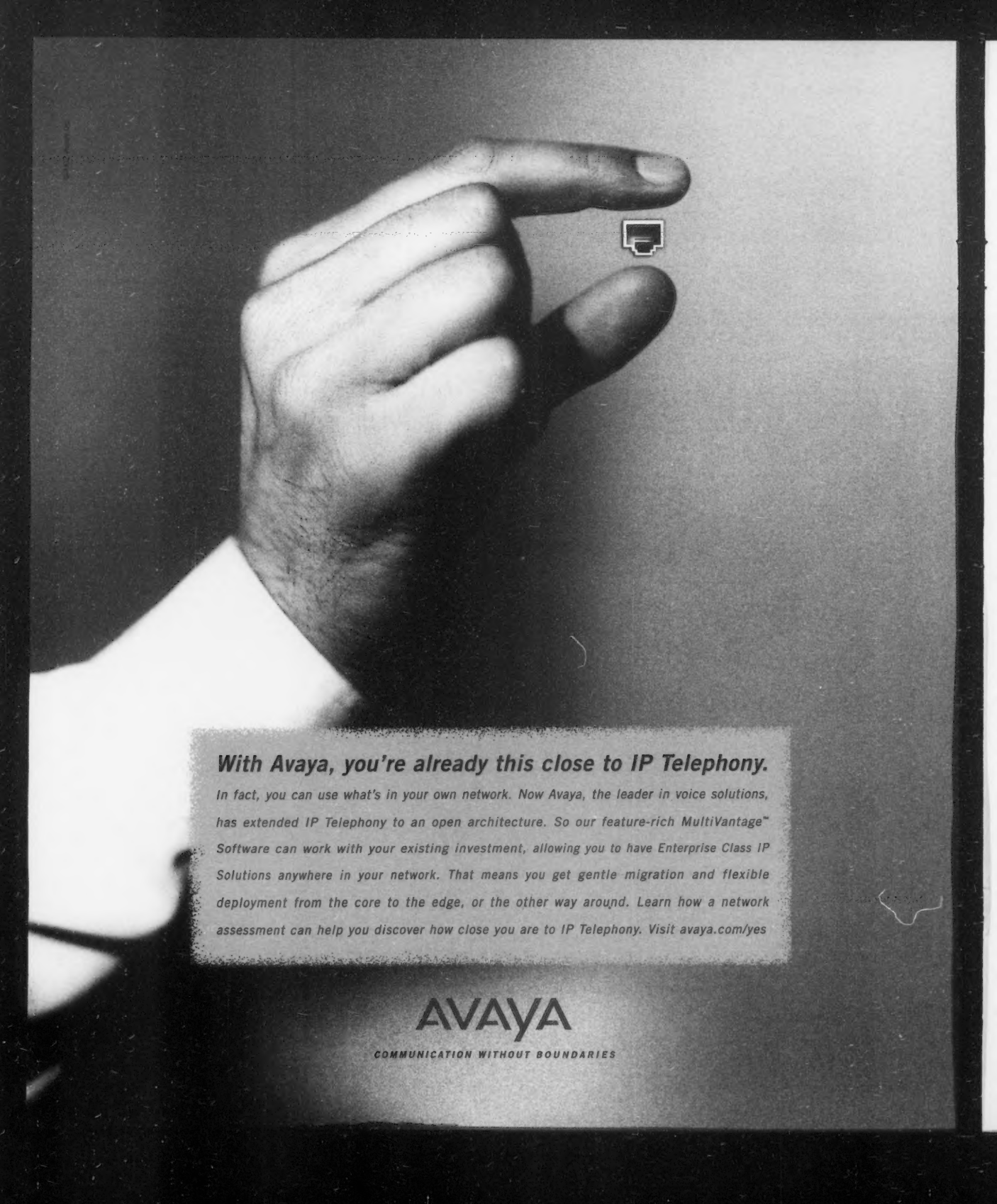
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Dear Career Adviser:

I am a chemical process-control consulting engineer, who has spent much time programming — for example, in Perl, C, Fortran, Mathematica, FoxPro and proprietary controller RT languages. I am contemplating a career change from process-control consulting to engineering/scientific programming at a large chemical or petroleum refiner. I have five years of post-graduate experience involving programming and worked overseas as an engineering intern for six months. How do I get from here to there?

— LOOKING AROUND

Dear Recently:

You might consider shifting your skills from chemical process control to electronic design automation (EDA), which is a fundamental underlying technology that has held up very well in this recession and continues to garner significant investment dollars, counsels Ted Miracco, executive vice president of Applied Wave Research Inc. in El Segundo, Calif. Applied Wave specializes in software used to design the chips that go inside cell phones and other wireless technologies.

From a skills perspective, transitioning to EDA requires a move from structured programming (Fortran, C) to object-oriented programming (C++) and scripting languages such as JavaScript, Perl and Visual Basic.

Since the focus of EDA is on electromagnetics, you will also need to show that you can turn scientific equations into usable code that performs simulations to automate the design process and that you can create applets that step users through the process. But since you already have the discipline to do programming in the chemical-process arena, you certainly would have the ability to translate formulas into software.

Finally, investigate EDA as a move to expand your career choices. EDA is used to design all of the chips produced by the semiconductor industry. And even in bust times, semiconductor and electronics companies still need to invest in their design tools.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

Dear Career Adviser:

I'm a software engineering recruiter with five years of experience, working mostly on the permanent placement side. However, I am seeing more new openings on the contract side at the moment and wonder whether I should pursue recruiting on the contracting rather than the permanent side.

— WHAT'S INVOLVED

Dear Involved:

Companies are generally more willing to hire contract employees when the economy is recovering, as seems the case now.

But before you decide to make a change, you might be wise to do a lot more homework, advises Herb Tieger, president of Campbell, Calif.-based Pacific Netsoft Inc., an IT contracting firm.

Even though you might be excited by a $50-per-hour differential between the "bill rate," the rate the client pays, vs. the "pay rate," the rate your contractor earns, these margins get eaten up quickly.

"Involved will have to arrange to payroll her contractors, handle their Social Security and [FICA contributions], never mind other basic statutory coverages such as unemployment insurance, worker's compensation and disability insurances," says Tieger.

Plus, you might find yourself pitted against already entrenched consulting firms with years in the business or footing the bill to cover the interest on money you will need to pay your contractors out of the fees your clients pay you, he adds.

And there are other considerations. You might need insurance coverage against the employment practices of the companies hiring contractors, fidelity bonds to cover contractors working on financial systems, and errors and omissions insurance to cover the potential "malpractice" of the technical consultant, according to Tieger.

Ultimately, instead of beginning your own consulting agency, you might be better off setting up your contractors to be payrolled either through another more established company or a professional employment organization until you know for certain that your contracting business will succeed, Tieger advises. ◗

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BRIEFS

Survey: Internet, Software Are Top Growth Sectors

CEOs believe that the Internet, software and life sciences industries will offer the greatest revenue growth potential in the coming year, according to a poll in Deloitte & Touche LLP's Fast 500 index. The CEOs also predicted that North America will lead the world in terms of growth and opportunities in the overall high-tech marketplace.

CIO Survey: Tech Spending Rebound Still A Year Off

Regardless of any general economic improvements, IT spending isn't expected to rebound this year, warned executives from Merrill Lynch & Co. during a briefing held in New York last week.

Still, spending on voice over IP, security, videoconferencing and Linux is expected to grow over the next several years, according to a recent survey of 74 U.S. and European CIOs that Merrill Lynch conducted.

Storage, customer relationship management and systems integration are likely to experience marginal growth this year, said Merrill Lynch analyst Steve Milunovich.

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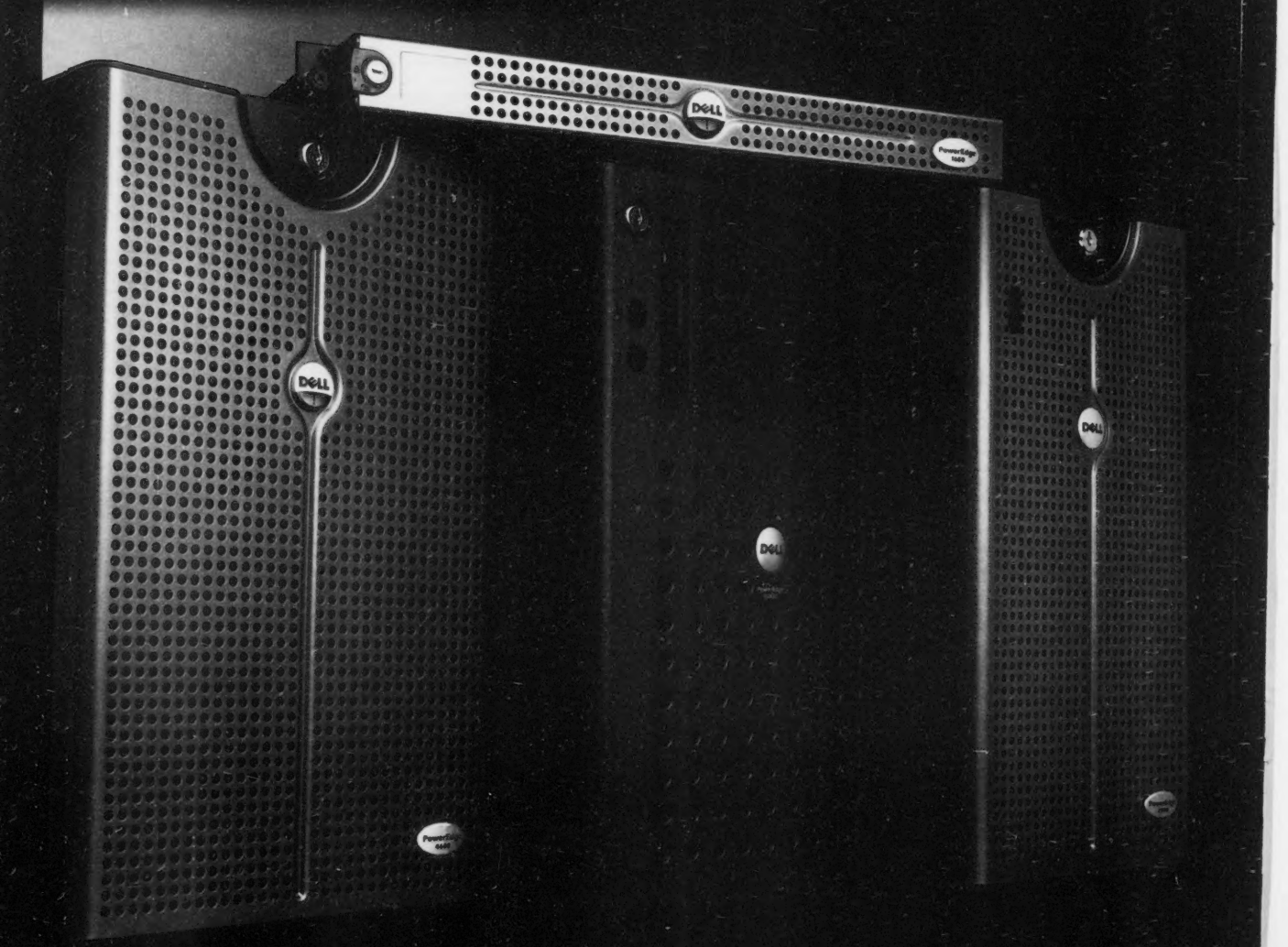

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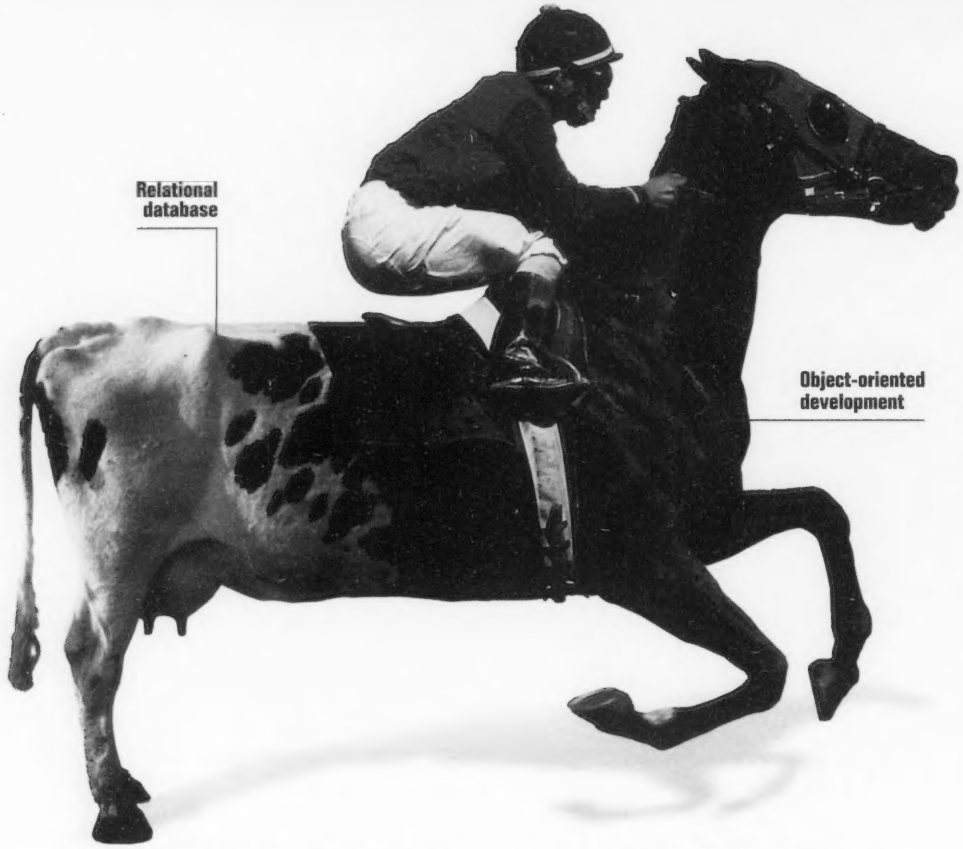

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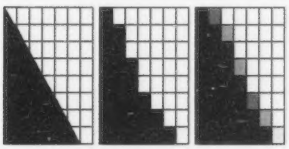
THIS WEEK

FIELD REPORT: VOIP

IP telephony promises to save money and improve service, but plenty of obstacles remain before users can take full advantage of converged voice, data and video services. **PAGE 50**



QUICKSTUDY

Anti-aliasing (right) smooths out the jagged or stair-stepped look (middle) of diagonal (left) and curved lines in computer graphics. Find out how it works. **PAGE 54**

HANDS ON

If you're planning to exchange data with a business partner, chances are it will be in XML. Unfortunately, XML's greatest strength — its self-describing nature — is also a serious security vulnerability. **PAGE 55**

FUTURE WATCH

For years, users have had poor privacy and security protections because encryption technology has been hard to use. New techniques will change that and make encryption easy enough to attract most users. **PAGE 56**

SECURITY JOURNAL

When a test installation of a wireless LAN leaves his company's network exposed, security manager Mathias Thurman decides on a layered security design. **PAGE 57**

NICHOLAS PETRELEY

IT From Planet Bizarro

I HAVE ALWAYS LOVED comic books and old science fiction movies. I wasn't a big fan of Superman, but I liked the stories about the planet Bizarro. Bizarro was an opposite world, where people set their alarm clocks to ring when it was time to go to sleep. And for some reason I never quite understood, the Bizarro people all talked like *Sesame Street*'s Cookie Monster: "Me want cookie."

As for old science fiction movies, one of my favorites is the 1956 version of *Invasion of the Body Snatchers*, starring Kevin McCarthy.

The plot revolves around seed pods that replace people with identical-looking but emotionless drones. The transformation occurs when the victim falls asleep near a pod.

I've only recently discovered that these two seemingly unrelated yarns are actually halves of a single reality that's unfolding before our eyes. I'm convinced that aliens are hiding seed pods near our beds, gradually replacing us with Bizarro versions of ourselves as we sleep.

I should have noticed something was wrong about five years ago when Oracle, IBM and others tried to promote network computing. IT decision-makers reasoned, "Me can spend $5 million in 10 years with network computing solution, or me can spend $10 million in five years with high-powered PCs on desktops. Me save money by purchasing PCs and upgrading every two years so workers can play solitaire and write e-mail faster!"

That business strategy always struck me as rather odd — not to mention the poor grammar. But I wrote off this blatant waste of resources to an effective Microsoft propaganda campaign against network computing. I drew back into a state of complacency until people started speaking positively of a new technology trend called grid, or utility, computing.

By itself, grid computing makes perfect sense. But when I heard people talk about basing their computer grids on desktop computers, something didn't seem right. The idea is to be able to add and redistribute computing resources by siphoning computing power from hundreds or even thousands of unsuspecting users. I know it's supposed to leverage unused CPU cycles, but I couldn't help but think of it as a managed distributed denial-of-service attack. As crazy an idea as it was, it wasn't quite the kind of insanity usually produced by the well-documented mind-control rays that emanate from Redmond.

Then I suddenly saw the connection. Grid computing is a logical continuation of the Bizarro decision to reject network computing. "Me waste big money on thousands of PCs with super-duper processors and waste more money managing all these PCs. What me do now? Replace PCs with network computers, simplify management and stop expensive upgrade cycle? No, me save money by adding new complicated software to PCs to off-load server processing to overpowered desktops. Me have more software to manage, more things to break and thousands more potential security holes!"

How many chief technology officers had fallen asleep with Bizarro pods under their beds? And how far had this spread? I had to know. Then I read a review of Onset Technology Inc.'s METAmessage (*www.metamessage.com*). Here, at last, was irrefutable proof that the invasion had spread even to vendors. Look at the problem METAmessage addresses: People often want to share information by sending e-mails with attached spreadsheets or other complex documents. Unfortunately, many wireless handheld devices can't read or decode these attachments.

There's no reason why productivity applications can't convert and mail complex documents as HTML. Some already do. Make it company policy, and the problem is solved. The folks at METAmessage, however, said, "Me solve problem by selling $7,000 server and extra handheld software. User clicks on attachment, handheld e-mails spreadsheet to server, server converts spreadsheet to HTML or text, and e-mails new message back to handheld! Me customers save money by paying for more servers, software and wireless traffic! Users save time by waiting for attachments to go to the server, get translated and returned as HTML!"

So, listen to me before it's too late! You're in danger. Can't you see? The Bizarro pods are after you. They're after all of us. You're next!

NICHOLAS PETRELEY is a computer consultant in Hayward, Calif. He can be reached at nicholas@petreley.com.

Talking

Overview: Voice Over IP

THE GOOD

- Consolidates the voice/data network infrastructure.
- Allows easier moves, adds and changes.
- Can consolidate interoffice voice traffic onto a wide-area network, replacing off-premises lines and tie lines provided by telecommunications companies.
- Allows easier integration of voice for call centers and other applications.

THE BAD

- Installation costs are the same or more than for a PBX.
- Systems still lack many features found in PBXs.
- Analog integration can be problematic.
- Consultants with the required voice and data experience are in short supply.
- Standards for powering phones over Ethernet, such as call control protocols, are still evolving.

DEPLOYMENT TIPS

- Start planning now. All LAN/WAN upgrades should take voice into account.
- Phase it in. Starting with a small branch-office installation allows staff to gradually come up to speed on IP telephony technology.
- Hire an expert. A good consultant will have experience in both the voice and data worlds.
- Check your infrastructure. Older LAN cabling that works fine for data may fail for voice applications. Wiring closets may require extra power and cooling.
- Be sure your WAN can handle it. Latency and bandwidth considerations may make running voice over the corporate WAN unworkable.
- Get what you need. Features vary widely, so make sure the ones your users need are supported.

BEST FIT TODAY

- For test installations in branch offices with all-new LAN infrastructures and for installations that don't need more sophisticated PBX features.
- As a replacement for Centrex and smaller key systems.

By Robert L. Mitchell

Crossing the Voice/Data Divide

TECH CHECK

FIELD REPORT

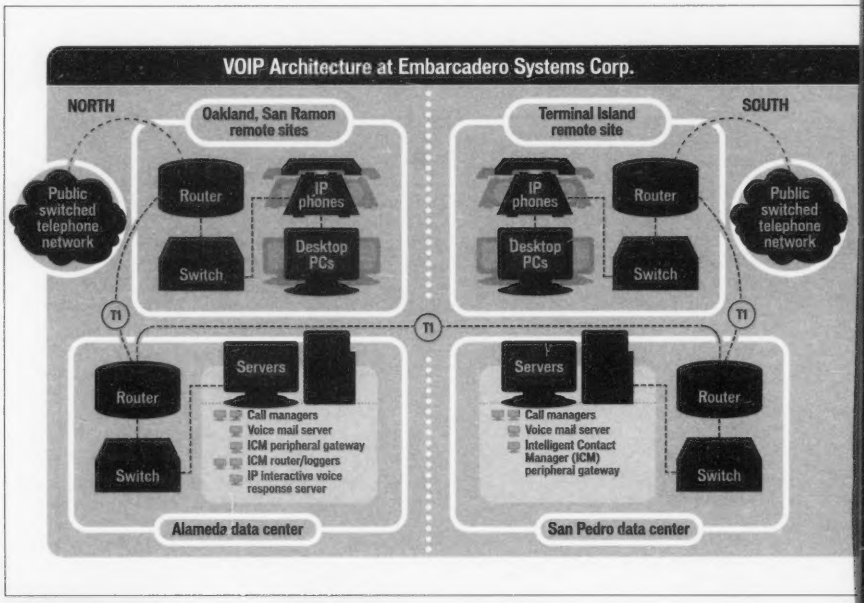
TO HEAR VENDORS TALK ABOUT IT, you'd think IP telephony in the enterprise was a tsunami about to break across corporate America. Indeed, traditional private branch exchange (PBX) vendors, initially caught off guard by IP telephony initiatives launched by data networking companies such as Cisco Systems Inc. in the late 1990s, have now embraced the technology as a way to boost moribund PBX sales.

But make no mistake; IP telephony is still very much an emerging technology. "We're slightly beyond the early-adopter stage, but not much beyond that," says Darrell Epps, a manager at integrator NextiraOne LLC in Houston. The truth behind the numbers is that most deployments are limited to so-called greenfield installations in branch offices where IT managers can safely experiment. And, these early users say, the state of the technology and the technical implications of layering voice traffic over existing data networks necessitate careful planning.

The traditional PBX system consists of a circuit switch, port cards that connect digital and analog telephones with interoffice tie lines and the public switched network, and call processing software. IP telephony breaks this apart.

In an IP telephony configuration, circuit switching becomes IP packet routing, which is coordinated by a call-processing server on the LAN. Voice traffic moves through the data network's Ethernet switches and routers, which are configured to give voice packets priority. IP telephones plug into the IP LAN and typically include a built-in hub for sharing the desktop computer's network connection. Finally, gateways to external connections may be embedded in routers or function as stand-alone network devices.

A hybrid configuration can extend the life of lega-



cy PBXs by using special port cards to allow IP phone connections. However, voice traffic remains circuit-switched on the back end, so organizations won't see the full benefits of a converged voice/data network.

IP's Advantages

IP telephony technology has several advantages over PBXs. Users can move their IP telephones to any office with a LAN jack and receive their calls without making any back-end or wiring closet changes. IT can build and maintain a single cable system where two existed before. Management and support can be consolidated. And if the corporate WAN can support voice traffic, interoffice calls can be routed through it, replacing expensive tie lines (which connect PBXs) and off-premise station lines.

Of 210 Enterprises Surveyed . . .

- **44%** of enterprises had begun implementing IP LAN telephony systems in 2001.
- **77%** will have done so in 2002.

Source: InfoTech, Parsippany, N.J., 2001

But most users say the real benefits will come as call center software and other applications evolve to take full advantage of converged voice, data and video services. "It's a good thing for us to get our foot in the door," says Ray Cowley, senior vice president at KeyCorp in Cleveland, which recently installed a Cisco AVVID system in 12 new KeyBank branch offices.

So, what's missing? IP telephony LANs generally don't offer the same range of advanced call-processing features as traditional PBXs, says Karen Simpson, an analyst at Stamford, Conn.-based Gartner Inc. Standards are also lacking. Most vendors still push proprietary phones that use their own call control protocols, while paying lip service to industry standards such as H.323 and the Session Initiation Protocol.

And while traditional PBXs power digital phones over voice circuits and can provide centralized backup power for several hours, each vendor uses its own proprietary technology to do so across the IP LAN. Standards are evolving, but the current lack of interoperability locks users into buying all core components, from IP phones to gateways to call processing servers, from a single vendor or its licensees.

Users have also faced installation issues, particularly in connecting with the analog world. "We had a lot of gyrations to get analog circuits and fax machines to work," says Cowley.

Despite these issues, users are generally bullish on IP telephony. "You've got to get out there and get your teams exposed to this," Cowley says.

Eventually, analysts say, IP telephony will be just another set of applications running over the enterprise network. But today, notes Cowley, "there's a lot of tweaking to try to work through some of the issues."

BRANCH-OFFICE BOTTLENECK?

KeyCorp decided to bank on IP telephony and had to implement it for 900 branch offices. Check out this deployment snapshot. **QuickLink: 29563**

Get up to speed quickly with this listing of links to informative sites, plus a rundown on IP telephony vendors. **QuickLink: 29565**

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Short-term Pain, Long-term Gain

SNAPSHOT
Embarcadero Systems Corp.
Alameda, Calif.

- **Who they are:** A provider of shipping terminal management services and cargo management systems
- **IT goal:** Replace aging Nortel Networks Ltd. Meridian private branch exchanges (PBX) in 20 locations with an IP telephony system running over a Cisco Systems Inc. network infrastructure. Replace the Nortel automatic call distribution (ACD) center with an IP-based application.
- **Strategy:** Implement Cisco-based IP telephony and ACD software that works with the recently upgraded data network infrastructure.
- **Challenges:** Cisco is still learning telephony, and it shows, says John Montgomery, chief technology officer at Embarcadero. "We ran into some technical issues trying to duplicate some very simple [PBX] features, and it stemmed from [Cisco's] lack of knowledge in that area," he says. That created disruptions for end users, who are now wary of the technology. "There were a lot more hidden costs, and [end-user] pain is one of those," Montgomery says.

Finding knowledgeable help to deploy the system was also a problem. When Montgomery hired a Cisco-recommended integrator, the firm had insufficient experience to deal with the deployment issues. "They took off in the middle of the implementation and left us high and dry," he says. His advice to others considering voice over IP: "Make sure you have a very experienced third party to implement it."

Legacy terminals were another problem. The company's HP 3000 uses a proprietary protocol that requires special routing. Cisco switches couldn't support IP voice and data packets and the terminal protocol at the same time. "When you have older technology, it's tough to make sure all the old stuff works," Montgomery says.

- **Results:** Montgomery implemented the system in three new locations and has partially implemented the system in the firm's data center. One of two call centers is also online, but he has decided not to proceed further at this time. "It works, but it's really complicated to implement," he says.
- **Benefits:** "The short-term investment is not as rewarding as we expected," says Montgomery, who sees IP telephony's benefits as more of a long-term proposition. "The value has diminished somewhat, given that we're not deploying it everywhere, but eventually it will add value." Montgomery says the alternative – investing in a new digital PBX – makes little sense. "I don't think companies have a choice but to go in this direction," he says.
- **Comments:** "Don't let future capabilities overshadow your ROI concerns, or you may be disappointed," warns Montgomery. "I'm telling you that we made a mistake. If I could do it over, I would focus on the fundamentals and make sure they worked." Still, he says IP telephony is the right way to go; he just moved too quickly. "I think maybe we were more on the bleeding edge," Montgomery says, "and I don't like being there." His advice: Wait six months to a year "so that the technology can catch up."

Phasing In IP Telephony

SNAPSHOT
Datek Online Holdings Corp.
Jersey City, N.J.

- **Who they are:** An online financial services vendor
- **IT goal:** Create a unified network infrastructure in a new building with IP telephony support for 1,000 users.
- **Strategy:** Replace Nortel Networks Ltd. PBXs with Cisco Systems Inc.'s AVVID IP telephony system and voice mail server. Implement fully redundant call processing servers, voice mail servers and gateways. Configure virtual LANs to separate voice and data traffic.
- **Challenges:** "We've been pretty fortunate in that we haven't had any major issues," says chief network architect Rolando Garcia.
- **Results:** Seven hundred employees have been using IP phones at headquarters for about one year, but Garcia left the call center running off the legacy PBX. He says he's hoping to get the call center on the IP network by midsummer.
- **Benefits:** "You don't need a huge room for telephony equipment," Garcia says. "This all fits into one rack vs. half a room for Nortel, [and] you can leverage the open architecture."
- **Comments:** "First and foremost, you need a sturdy network," advises Garcia. "If it's not stable, you'll see it right away with latency and jitter. Secondly, go in a phased approach. Try not to do the whole company in one shot."

Field Report continues on page 52

in Packets

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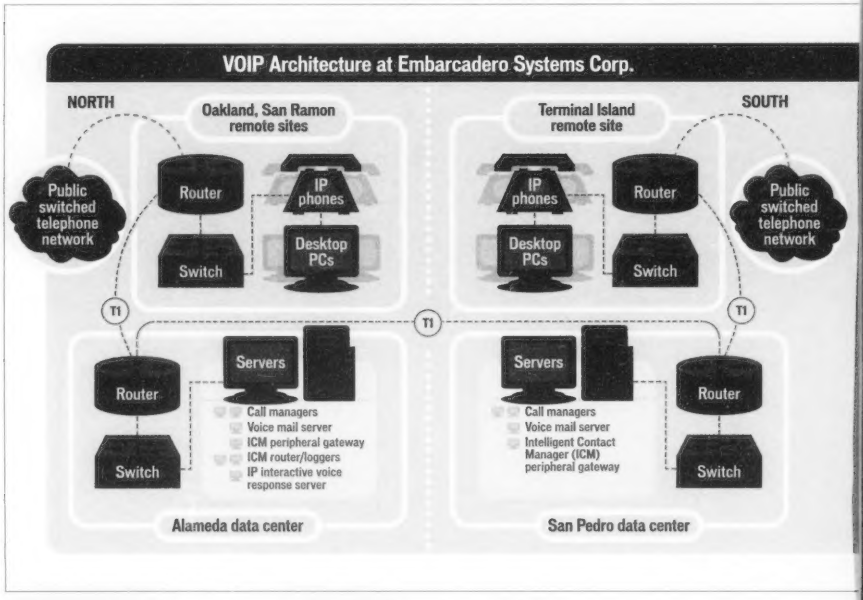

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Users have also faced installation issues, particularly in connecting with the analog world. "We had a lot of gyrations to get analog circuits and fax machines to work," says Cowley.

Despite these issues, users are generally bullish on IP telephony. "You've got to get out there and get your teams exposed to this," Cowley says.

Eventually, analysts say, IP telephony will be just another set of applications running over the enterprise network. But today, notes Cowley, "there's a lot of tweaking to try to work through some of the issues."

BRANCH-OFFICE BOTTLENECK?

KeyCorp decided to bank on IP telephony and had to implement it for 900 branch offices. Check out this deployment snapshot. **QuickLink: 29563**

Get up to speed quickly with this listing of links to informative sites, plus a rundown on IP telephony vendors. **QuickLink: 29565**

Need a consultant? Finding the right one may be critical – and difficult.

QuickLink: 29561
www.computerworld.com

Short-term Pain, Long-term Gain

SNAPSHOT
Embarcadero Systems Corp.
Alameda, Calif.

- **Who they are:** A provider of shipping terminal management services and cargo management systems
- **IT goal:** Replace aging Nortel Networks Ltd. Meridian private branch exchanges (PBX) in 20 locations with an IP telephony system running over a Cisco Systems Inc. network infrastructure. Replace the Nortel automatic call distribution (ACD) center with an IP-based application.
- **Strategy:** Implement Cisco-based IP telephony and ACD software that works with the recently upgraded data network infrastructure.
- **Challenges:** Cisco is still learning telephony, and it shows, says John Montgomery, chief technology officer at Embarcadero. "We ran into some technical issues trying to duplicate some very simple [PBX] features, and it stemmed from [Cisco's] lack of knowledge in that area," he says. That created disruptions for end users, who are now wary of the technology. "There were a lot more hidden costs, and [end-user] pain is one of those," Montgomery says.

Finding knowledgeable help to deploy the system was also a problem. When Montgomery hired a Cisco-recommended integrator, the firm had insufficient experience to deal with the deployment issues. "They took off in the middle of the implementation and left us high and dry," he says. His advice to others considering voice over IP: "Make sure you have a very experienced third party to implement it."

Legacy terminals were another problem. The company's HP 3000 uses a proprietary protocol that requires special routing. Cisco switches couldn't support IP voice and data packets and the terminal protocol at the same time. "When you have older technology, it's tough to make sure all the old stuff works," Montgomery says.

- **Results:** Montgomery implemented the system in three new locations and has partially implemented the system in the firm's data center. One of two call centers is also online, but he has decided not to proceed further at this time. "It works, but it's really complicated to implement," he says.
- **Benefits:** "The short-term investment is not as rewarding as we expected," says Montgomery, who sees IP telephony's benefits as more of a long-term proposition. "The value has diminished somewhat, given that we're not deploying it everywhere, but eventually it will add value." Montgomery says the alternative – investing in a new digital PBX – makes little sense. "I don't think companies have a choice but to go in this direction," he says.
- **Comments:** "Don't let future capabilities overshadow your ROI concerns, or you may be disappointed," warns Montgomery. "I'm telling you that we made a mistake. If I could do it over, I would focus on the fundamentals and make sure they worked." Still, he says IP telephony is the right way to go; he just moved too quickly. "I think maybe we were more on the bleeding edge," Montgomery says, "and I don't like being there." His advice: Wait six months to a year "so that the technology can catch up."

Phasing In IP Telephony

SNAPSHOT
Datek Online Holdings Corp.
Jersey City, N.J.

- **Who they are:** An online financial services vendor
- **IT goal:** Create a unified network infrastructure in a new building with IP telephony support for 1,000 users.
- **Strategy:** Replace Nortel Networks Ltd. PBXs with Cisco Systems Inc.'s AVVID IP telephony system and voice mail server. Implement fully redundant call processing servers, voice mail servers and gateways. Configure virtual LANs to separate voice and data traffic.
- **Challenges:** "We've been pretty fortunate in that we haven't had any major issues," says chief network architect Rolando Garcia.
- **Results:** Seven hundred employees have been using IP phones at headquarters for about one year, but Garcia left the call center running off the legacy PBX. He says he's hoping to get the call center on the IP network by midsummer.
- **Benefits:** "You don't need a huge room for telephony equipment," Garcia says. "This all fits into one rack vs. half a room for Nortel, [and] you can leverage the open architecture."
- **Comments:** "First and foremost, you need a sturdy network," advises Garcia. "If it's not stable, you'll see it right away with latency and jitter. Secondly, go in a phased approach. Try not to do the whole company in one shot."

Field Report continues on page 52

in Packets

FIELD REPORT

Talking in Packets

Continued from page 51

Culture Clash

FIELD NOTES

When voice and data technologies converge, the groups that support them often do as well. For both sides, the process can be a culture shock, IT managers say. The data side needs to learn analog circuits, telephones and voice mail, while voice technicians must understand data networking and routing technologies.

Technicians must also understand the implications of a converged network, says analyst Karen Simpson at Stamford, Conn.-based Gartner Inc., citing one client's experience. "One technician decided to take a server down at 10 in the morning to do some network changes, and he brought the whole voice and data network down. He put in the wrong routing, and they were out of phones for four hours," she says.

Bill Miller, desktop services manager for Nevada County, Calif., merged his own telecommunications and support staffs and says, "The learning curve for the traditional desktop-support person to go to the telephony side is very minimal. It's more difficult for the voice side to go over to the data, because they're not in tune with the routers, gateways and edge LAN equipment."

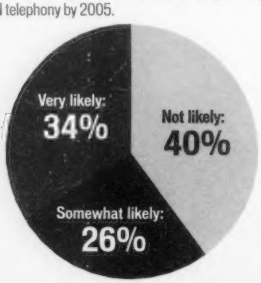
"The staff that has more voice experience is still the weaker of my network analysts," says John Montgomery, chief technology officer at Alameda, Calif.-based Embarcadero Systems Corp. He adds that some problems that voice technicians used to address now must be handled on his AVVID system by more expensive network engineers.

Nevada County CIO Steve Monahan says cross-training actually makes it easier to retain telecommunications support staff. "We had problems getting new young talent to work on telecom – they all want to be computer guys," he says. "Now they're jazzed."

And once technicians are trained, end users are the winners, says Miller. "Our network and PC guys are now phone guys," he says. "We just increased the level of support staff that can support our clients with the new phone system."

Implementation Plans

Ninety-two of 210 enterprises surveyed said they had begun implementing IP telephony systems. Decision-makers at those 92 companies rated 60% of the offices associated with their enterprises as "very likely" or "somewhat likely" to implement IP LAN telephony by 2005.



Base: 210 U.S. businesses with between 500 and 200,000 employees
SOURCE: INFOTECH, PARSIPPANY, N.J., 2001

Voice, Data Vendors Face Off

Your data network infrastructure is a Cisco shop; your telephony group swears by Nortel. Which vendor should supply your IP telephony system? While Cisco and 3Com both came to market early with IP telephony systems, the traditional vendors are hitting back with their own offerings. Here's a look at the trade-offs.

The Data Route

COMPETITORS

Cisco Systems Inc. and Santa Clara, Calif.-based 3Com Corp. lead the market for midsize and large IP telephony systems. Cisco's AVVID architecture takes a modular, open approach: Gateway devices plug into its routers, and its CallManager and Unity voice mail software run on separate Windows servers. 3Com's NBX systems bundle everything together: The voice mail, call management and gateway interface cards come in a single server chassis running VxWorks, a real-time operating system based on Unix.

Both systems work optimally in organizations that have already invested in the vendors' switches and routers. However, several users reported difficulties getting analog connections to work properly and cited a lack of vendor experience in dealing with the problems. And both vendors lag behind traditional private branch exchanges (PBX) in terms of available call-processing features.

"Cisco is not close to what a Nortel or Avaya can offer," says Karen Simpson, an analyst at Stamford, Conn.-based Gartner Inc. Darrell Epps, a manager at NextiraOne LLC in Houston, concurs but says, "The vast majority of [our] customers are not using those features anyway." Bottom line: List all the features you need in the request for proposals and make sure the product can support them without customization.

The Voice Circuit

The leaders on the voice side include Nortel Networks Ltd., Avaya Inc. and Siemens Enterprise Networks USA. All three offer hybrid systems, and some vendors have rolled out native IP systems as well. Basking Ridge, N.J.-based Avaya, for example, claims to have migrated the entire feature set of its Definity PBX systems into its ECLIPS IP telephony offering and says the system can interoperate with legacy Definity systems.

In addition to a broader feature set, traditional PBX vendors can offer a consistent migration path. You don't have to retrain end users, says Epps, but getting the systems to work with existing switches isn't as easy. For example, "the quality of service implementations done by Nortel are not entirely in keeping with those done by Cisco," and that can cause interoperability problems, he says.

One County's Trial by Fire

CASE STUDY

Nevada County, Calif., was already planning to cut over to a new IP telephony system when a March 19 fire destroyed a building in Nevada City that housed the county's Siemens Saturn private branch exchange (PBX).

Before the fire was out, Bill Miller, desktop services manager, says his group had relocated the building's 120 employees and set them up with IP phones with access to their telephone extensions and voice mail on a 3Com NBX 100 communications server. Miller's experience demonstrates one benefit of IP telephony systems: the ability for users to relocate their offices and have immediate and full access to their telephone services simply by plugging their IP phones into the nearest network connection. "That gives us credibility, being able to do that in crisis mode and being able to set up a triage operation," says Miller.

IP TELEPHONY projects are "not for the faint hearted," warns Bill Miller.

But what appeared to end users as a quick and easy transition was actually the culmination of a long and often painful learning process, Miller says.

Two factors started the county down the voice-over-IP road. First, Reston, Va.-based Siemens Enterprise Networks USA dropped maintenance on the circa 1987 Siemens Saturn PBX that served more than 700 users. But Miller also saw IP telephony as enabling technology for his application infrastructure. "We have the interactive voice response, the phone system, the Web, e-mail, and we wanted to lay down the foundation for them to work together," he says.

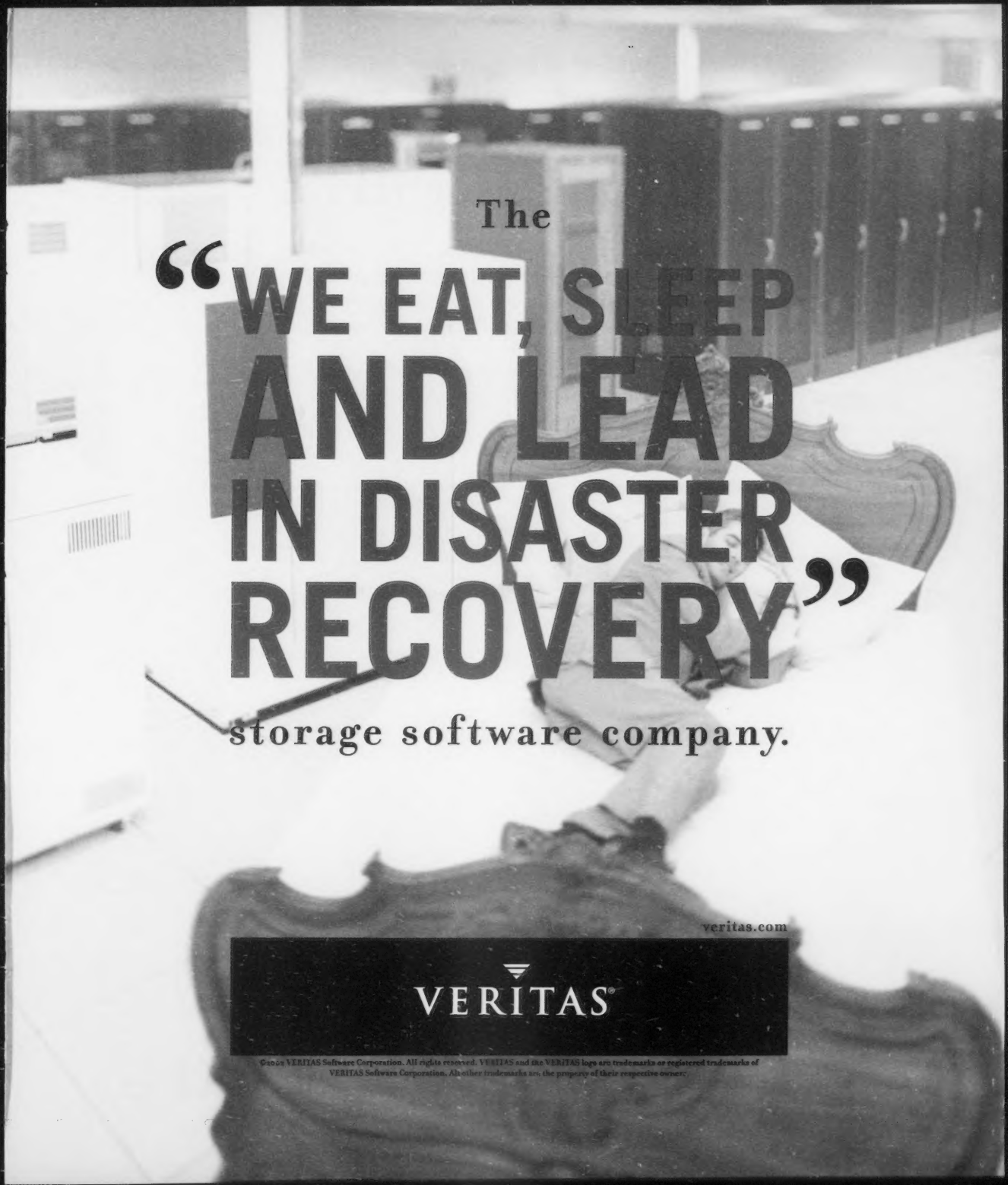
That foundation didn't set quickly or easily, however. Miller says he chose products from Santa Clara, Calif.-based 3Com Corp. because his data network is built on the vendor's gear. He chose the county courthouse for the first installation and put in all-new SuperStack 3300 Ethernet switches and a fiber backbone.

"That's when the fun started," Miller says. First, he had trouble getting the NBX server in the courthouse to pass calls through a T1 line to another NBX in the data center and out to trunk lines. Also, integration problems prevented users on the 3Com system from using four-digit dialing to call other users on the Siemens PBX.

"Then we started to get performance problems," Miller says. The older, Category 3 wiring, which worked fine for data, was a disaster for voice. "If you had one or two workstations with bad wiring, it would affect that closet," Miller says. The result was oscillating volume, dropped calls and echoes. It took six months to clean up the problems and resolve the trunk-line issues.

One problem remains unresolved. The old system was programmed to route callers to a specific attendant for their group. With the 3Com system, "if you press zero, it can only go to one attendant organizationwide." To get around that, Miller has had to train users to dial zero plus a four-digit extension. "I'm having to do a public relations thing to explain how you operate voice mail," he laments.

With most of these problems behind him, Miller, who is now switching over the bulk of the county's users, is still optimistic about IP telephony. "I just halved the cost of my [wiring] closets," he says. Miller also cites a drop in hardware maintenance costs, as well as a reduction in power, air conditioning and floor-space requirements in the data center. But, he acknowledges, "it's not for the faint hearted."



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Anti-aliasing

BY SAMI LAIS

ANTI-ALIASING smooths the raw and haggard edges on digital type and images on computer and handheld displays, wireless phones, printers, even digital cameras.

Aliasing — jagged or stair-stepped edges — appears when there are too few pixels in an image or on a display to represent it realistically.

Spectral aliasing — moiré or herringbone patterns where none should be — appears as a result of interference between digital signals, such as color and brightness.

DEFINITION

Anti-aliasing is the mathematical antidote to aliasing, the jagged or stair-stepped look of diagonal or curved lines in computer graphics. An anti-aliasing algorithm, applied to a bitmapped image or type, evaluates the tone and color of pixels at the image edge and shades or offsets adjoining pixels to present to the eye a smoother, softer line.

How It Works

In graphics or type, anti-aliasing algorithms sample, or examine and evaluate, the colors and shades of pixels adjoining curved or diagonal lines. They also shade some pixels to create a softer line. The eye no longer clearly sees the stair-stepped edge and, paradoxically, it reads the softer line as clearer.

Some anti-aliasing algorithms create a similar effect by jittering. Instead of changing a pixel's color or tone, the filter slightly offsets, or jitters, the pixel by a random amount from its normal placement. This creates a more gradual transition between an object and its background.

Dithering, or creating a similar shaded effect using patterns of dots of colors, can create an anti-aliasing effect for photographs and shaded drawings.

Increasing the resolution and thus reducing the pixel size can create an effect similar to that of anti-aliasing, but this may not always be feasible.

QUICK STUDY

Fractal compression lets you store thousands of large image files on a single CD.

Fractal compression works by reducing each shape or pattern to an equation. When the fractal image is reconstructed, there's often more information than the display can show, and artifacts — bits of white debris — are created. Anti-aliasing eliminates these artifacts and creates smoother edges.

High-end graphics hardware maker Silicon Graphics Inc. in Mountain View, Calif., developed an anti-aliasing method that uses special accumulation buffers that temporarily store rendered frames. When several frames have accumulated, the graphics chip blends them together.

To counter aliasing, some devices, such as Intel Corp.'s Pentium III chip and many printers and digital cameras, incorporate anti-aliasing filters. High-end graphics cards may contain more sophisticated anti-aliasing filters.

Most anti-aliasing filters sample adjoining pixels between two and 16 times at different locations, then combine and average the different readings to get the most realistic color. More samples result in subtler gradations between image edges and along curved or diagonal lines and type. But a higher sample rate takes more time and memory.

Some cards use supersampling, which renders the image at a resolution higher than the display can support and then scales down and filters the image — in effect, adding new pixels, before sending it to the display. But such brute-force techniques take a toll on performance.

Trade-offs

Some graphics cards makers use anti-aliasing filters with distinctive sampling patterns that create a high-sample effect with a modest sampling rate.

The GeForce4 Ti 4600 graphics card from Nvidia Corp. in Santa Clara, Calif., uses a multisampling technique, which embeds the anti-aliasing in hardware. The performance decline is much less with this technique, Nvidia says, because some of the samples on which it bases the anti-aliasing are virtual rather than actual pixels.

Edge anti-aliasing, such as in San Jose-based Adobe Systems Inc.'s Photoshop software, doesn't anti-alias an entire photograph or drawing, but only where an object of one color and tone meets another such object or the background.

Experienced users can take advantage of Photoshop's sharpen and blur tools to simulate the anti-aliasing effect.

Visual disruption caused by aliasing is even more obvious with video. As stills, each frame may look fine. But as a video image, artifacts could make the edge of a building appear to crawl or twinkle. Anti-aliasing can eliminate most of these problems.

But while anti-aliasing an image may smooth edges to give it a less harsh appearance, photographers may prefer the sharper image.

As with photographic detail, type smaller than 14 pixels high (about one-seventh of an inch on a normal display screen) doesn't benefit from anti-aliasing fuzzy edges.

Generally, anti-aliasing helps with display type, logos, graphics and some photographs, but it doesn't help text-size type or when maximum sharpness and detail is needed. ◗

Lais is a freelance writer in Takoma Park, Md.

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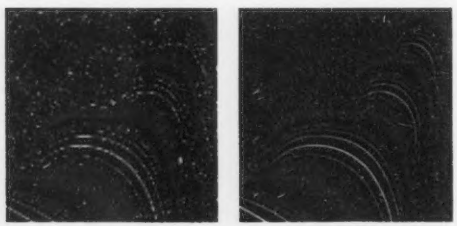
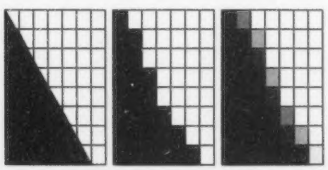
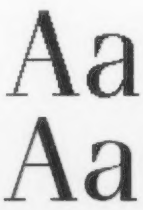


Fractal compression lets you store thousands of high-resolution images on a single CD, but decompressing them can cause artifacts, as shown in the image on the left. Anti-aliasing removes the artifacts, as shown on right.



Imagine that each square in the grid is a pixel. If you were to draw a diagonal line, it wouldn't look like the line on the left but rather like the one in the middle. To disguise the jagged look, anti-aliasing samples pixels at the edge and creates new shaded pixels that blur the jagged line. If you squint, you'll see the line at the right looks straighter than the line in the middle.



The letters on the top look ragged. By adding pixels to curved and diagonal lines in type, anti-aliasing makes the letters on the bottom look smoother and more legible. This effect works best on type that's more than 14 pixels high.

XML's Dirty Secret

As B2B embraces XML, the technology can inadvertently expose sensitive data. By Russell Kay

TECHNICAL ANALYSIS

THE INFORMATION security crowd has a serious problem. These folks think that what they're doing to safeguard data still works. Sure, they did good work keeping secrets and ensuring data availability and integrity when most computing was mainframe-based as well as during the client/server boom of the '90s. And they even made electronic data interchange safe.

But in the age of Java and .Net, where most business-to-business data will be represented in XML, things are very different.

Yes, virtual private networks (VPN) and end-to-end encryption using public-key infrastructure technology can keep data confidential while it's in transit. Protecting data at the network level is fine, until someone hacks into your system and goes fishing for it. But the real vulnerability is XML itself.

The trouble with XML is that it explains far too much about the data that's represented in it. The tags that define the structure of a document and describe what each individual data element is also make it dead easy to locate sensitive data, such as credit card and transaction information. This is simultaneously the basis of XML's power and its greatest weakness.

The metadata of the tags simplifies programming and facilitates interoperability. But it also helps point out to interlopers — whether inside or outside the organization — where the important stuff is. Using XML for sensitive or mission-critical traffic is like painting a target on the data. Not only is the data exposed and wide open, but it also calls attention to itself.

Application programmers know this. System designers know this. And if they think about it, IT managers, too, realize the vulnerability. But according to Weston Swenson, president of Wellesley, Mass.-based Forum Systems Inc. (*www.forumsys.com*), the IT security establishment seems to think that using Secure Sockets Layer encryption or a VPN to protect data being transmitted is all they need to do. If that's what they think, then they're a few years behind the curve, says Swenson, whose company's product addresses XML security directly. Forum's product seems like a good answer to a question IT managers and CIOs should be asking themselves.

Forum's Sentry Server Appliance is an encryption engine targeted directly at XML data going to or from an application. It takes a data stream and selectively encrypts specific data, and even data tags, so it can hide the data description. Someone who's looking for credit card tags using a search string — *<cre*, for example — won't find them if the tags themselves have been encrypted. All that appears is *<cyphertag>*, which could be anything. And multiple cyphertags need not, of course, all represent the same data type.

The product is quite simple: It's basically a Linux box with Forum's proprietary software. Using the built-in workbench, you can examine the XML structure of a typical transaction and set encryption policy for whichever data elements and tags you wish. The encryption uses Triple Data Encryption Standard, with RSA for key management, so that's not a weak point. Because the product encrypts only what you tell it to, it can process data very quickly.

And there's more. The box can digitally sign data, ensure nonrepudiation and issue certificates. Since it's a dedicated device that handles just a character stream as both input and output, it really doesn't care what kind of hardware, software or operating system the rest of your systems use.

Raising Awareness

I worked in the computer security industry for a dozen years, during a time when the major problems involved neither secrecy nor availability. The trouble spots were awareness (getting users to recognize the need for security) and integrity (making sure data wasn't corrupted, usually because of errors and omissions).

Security awareness today is higher than it's ever been, and we've got lots more tools to ensure data integrity and protect against viruses. We have industrial-strength encryption that's almost certainly unbreakable for at least the next decade.

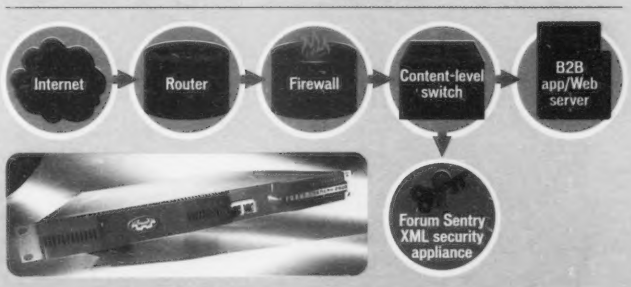
But the very strength of our encryption capabilities can mislead us into a very false sense of security. Yes, we have the ability to encrypt our data so it's unreadable. But do we actually do it? And do we encrypt the right stuff at the right time?

We expend a lot of effort to protect data so we can communicate it easily and cheaply over the Internet. But once it arrives at its destination, it's decrypted and stored in our databases, and the only remaining security is whatever firewalls and authentication systems are in place. And we know that those can be and are being hacked every day.

XML is one of the most powerful ideas to engage modern e-commerce. Let's make sure it works for good.

Encrypting XML

With Forum's Sentry Server Appliance, a data stream is processed to encrypt outgoing XML traffic and decrypt incoming data. The dedicated crypto box and selective encryption of just specified fields and tags keeps overhead to a minimum.



FUTURE WATCH

Cryptography For the Masses

Encryption will be everywhere, and easier to use. By Gary H. Anthes

CRYPTOGRAPHY expert Martin Hellman, co-inventor of Diffie-Hellman public-key encryption, says he never encrypts his e-mail. It's just too much trouble.

"There's a lack of integrated, automatic, transparent crypto," says Hellman, professor emeritus of electrical engineering at Stanford University. "If security is an add-on that people have to do something special to get, then most of the time they will not get it."

But there are developments afoot that during the next five years may bring some of the integration, automation and transparency Hellman is looking for.

"Cryptographic operations will disappear into the infrastructure," predicts Tom Berson, a principal scientist at Palo Alto Research Center Inc. (PARC) in California. "The complexities of cryptography and of cryptographic key management will be hidden from users."

Encryption will be seamlessly integrated into virtually every computing device and piece of communications software, Berson says.

And it will happen not a moment too soon. Increased connectivity in general and the rapid rise in wireless communications in particular are leaving users with files, messages and telephone conversations vulnerable to loss of privacy and confidentiality.

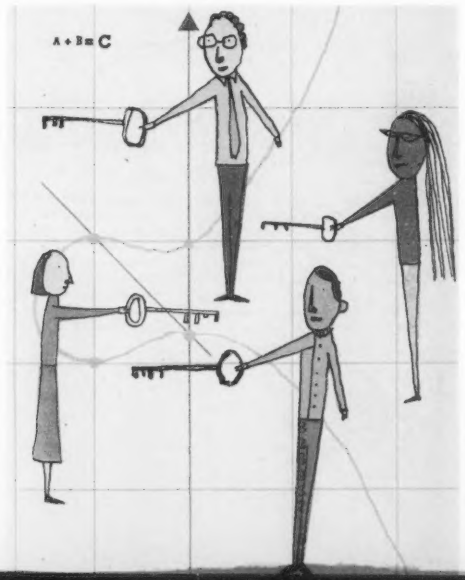
PARC researchers have several projects under way to encourage the use of encryption. One, called Quicksilver, is a program aimed at convincing vendors and users that cryptography is no longer slow and difficult to use. In its Quicksilver Manifesto, PARC exhorts users to "demand that your interests take priority over obsolete beliefs about what can and cannot be done to secure your information."

PARC is also working on making encryption more user-friendly. For example, it has proposed an intuitive scheme for user authentication in ad hoc wireless networks. The scheme uses public-key cryptography, but without a public-key infrastructure (PKI) that requires users to have digital certificates signed by a trusted third party.

"The problem with PKI is the *I*, not the *PK*," says PARC researcher Diana Smetters.

Stanford researcher Dan Boneh is developing a public-key system based on Identity-Based Encryption, by which users can use their e-mail addresses as their public keys. Recipients of e-mail encrypted by the system wouldn't need pre-established keys or certificates. The system would also allow the creation of messages that can be read only at a specified future time.

And Anna Lysyanskaya, a computer science graduate student at MIT, is working with IBM to develop privacy-oriented "anonymous credentials." For example, users could sign up for an online service without divulging their identities. The service provider could verify that a user is registered, but it couldn't track his activities and track them back to him.



JON CRAMER

Crypto Scenario

- Encryption will be integrated, automatic and transparent.
- It will secure every computing and communication device.
- There will be public-key cryptography without an elaborate infrastructure.
- The powerful new AES will gain wide acceptance.
- The lightweight but powerful ECC will secure wireless and mobile communications.

Years of Development

Encryption is based on complex mathematics, and it often takes years for experts to satisfy themselves that there are no serious flaws in a cryptosystem. For example, the new federal Advanced Encryption Standard (AES) algorithm, which is replacing the old, less secure Data Encryption Standard, is based on techniques developed in the mid-1990s. But the U.S. Department of Defense won't widely deploy AES cryptography until 2007.

"Within three years, we'll see a reasonable deployment of AES," including in Sun Microsystems Inc. products, predicts Susan Landau, a senior staff engineer at Sun. She says that Sun is also likely to embrace Elliptic Curve Cryptography (ECC), a public-key cryptography created in 1985.

ECC has advantages over the more widely used RSA encryption scheme. These advantages principally include shorter key lengths and faster performance for a given level of security. Landau says that may make it the cryptosystem of choice for mobile devices short on processing power and memory.

"Pretty much all of the new standards coming out of places like the [Internet Engineering Task Force] are being written to support ECC," Smetters says. "You will start to see people adopt ECC as an option; after it's a pretty common option, it will start to become the default."

Cryptosystems based on existing algorithms are likely to remain in use for many years. They can be strengthened against brute-force attacks launched by ever-faster computers by increasing the length of the encryption keys they use. But, experts say, there is a threat looming for all public-key systems: ultra-fast, massively parallel quantum computers. Very primitive quantum computers have already been built at IBM.

However, Hellman says it's likely to be at least 10 to 15 years before quantum computers can be scaled up to crack modern encryption keys. "So, while prudence dictates that we keep our eye on quantum computing, there is no immediate threat," he says.

CRYPTOGRAPHY CRITIQUE

Read Martin Hellman's views about current cryptography practices at our Web site:

QuickLink: 29732
www.computerworld.com

Wireless LAN Install Leaves Corporate Net Wide Open

After a test install allows drive-by hacking, Mathias steps in with a layered security design

BY MATHIAS THURMAN

NO MATTER HOW MUCH detail one provides to upper management regarding a vulnerability or a security issue, sometimes a technology that isn't in the company's best interests is approved.

My problems started when an executive within the company proposed building a LAN infrastructure using an 802.11b wireless LAN. By his figures, rolling out wireless would help the company avoid more than $2 million per year in lost productivity. I have a hard time believing that we would save that much, and I've yet to see any supporting documentation. Most of our employees have offices or cubicles with wired connections, and each conference room has enough Ethernet drops so that anyone who wants to connect his laptop to the corporate network can do so easily.

SECURITY MANAGER'S JOURNAL

A few months ago, when the decision was made to implement a wireless network, Windows NT administrators within the IT department did the initial implementation on our development network. They're very good administrators, but they knew nothing about wireless technology and installed everything using the default settings. This included using the notoriously insecure 40-bit Wired Equivalent Privacy (WEP) protocol encryption and the default Service Set Identifier (SSID) codes that identify the wireless hubs on the network.

Weaknesses Revealed

Upon reviewing the install, my team was able to demonstrate how weaknesses in the implementation would allow a hacker with freely downloadable software and a $100 wireless LAN card to sit outside our building and gather information that would then let him gain access to our corporate network. We positioned ourselves on the street in front of our building and used these tools to start collecting packets and crack the WEP algorithm. I'm not a cryptographer and don't know the details of WEP encryption. But by using these tools, which compiled easily on our Unix server, I was able to collect network packets and crack the WEP key.

After I demonstrated this to our CIO, he trashed the wireless project, and that appeared to be the end of it — until three weeks ago. Suddenly, the executive staff was at it again, deciding that we should implement a wireless LAN anyway. We were being forced to implement a technology that has a history of being insecure. Although I didn't think the benefits outweighed the security risks, the deployment was happening anyway. So we had to make the best of it.

Fortunately, I was able to convince management that my team should at least specify the products and configuration to improve security. After reviewing the options, we decided to require Cisco Systems Inc.'s Aironet access points and adapters, which include enhanced security features.

Like many products, Aironet supports stronger, 128-bit encryption. But the feature that attracted us was Aironet's Lightweight Extensible Authentication Protocol (LEAP). With LEAP, Cisco decouples authentication from the encryption process by supporting the use of an external Remote Authentication Dial-In User Service (RADIUS) server to authenticate wireless LAN users. In traditional wireless systems, anyone with the proper SSID and password (used for WEP encryption) can become a node on the network. With LEAP, even if someone were to compromise the SSID and the encryption key, he would still need an account on the RADIUS server to gain access to the LAN.

Aironet also lets administrators establish a midsession reauthentication policy. We plan to configure this feature so that users are forced to authenticate again every 30 minutes. This type of policy disrupts a hacker's ability to intercept packets and crack the session key, which could be used to gain entry to the network.

Tunnel Security

We already have Cisco's Secure Access Control Server to authenticate our virtual private network (VPN) users, and we're going to force the use of a VPN tunnel for wireless access to our corporate infrastructure. We'll use our current installation of VPN concentrators and configure them so that only the required level of access will be authorized for each wireless user. For example, if a sales employee accesses the network wirelessly, he will have permission to access only e-mail, the intranet Web site and specific sales force tools. On the other hand, a Unix administrator will have permission to access the gateway servers we use to control access to our critical Unix servers.

We also plan to require the use of a token for those individuals who have permission to access critical servers via their wireless connections. This way, if a compromised laptop has passwords either stored in clear text or cached in the application, the potential hacker won't be able to break in unless he has the user's token. This may seem like a lot of extra overhead on our users and their equipment, but we can make it virtually invisible to the end users — aside from the occasional requirement to reauthenticate and present the SecurID token.

There are certain levels of exposure with almost any technology, and wireless is no different. However, Cisco's technology, coupled with our current installation of RADIUS and VPN services, should provide a reasonably secure environment for our employees.

Our security team presented its recommendations to upper management, and they have agreed with the proposed design. The next step is getting the new infrastructure into the lab to ensure everything works as planned.

But we're not done yet. If you've had a chance to play in the wireless space and can offer some suggestions, please feel free to share your experiences in the Security Manager's Journal forum.

Six-Step Program for Wireless LAN Security

The six main features of the wireless LAN security strategy at Mathias Thurman's company:

1. **Enable** 128-bit session encryption.
2. **Configure** RADIUS server authentication.
3. **Force** 30-minute periodic reauthentication for all users.
4. **Require** use of VPN to access critical resources.
5. **Restrict** LAN access rights by role.
6. **Implement** two-factor authentication scheme using access tokens for users accessing critical infrastructure.

THIS WEEK'S GLOSSARY

Service Set Identifier: SSID is a code attached to packets sent over the wireless LAN that functions as a password for communicating between wireless clients through a wireless hub, or access point. All access points in a network must use the same SSID to communicate.

Wired Equivalent Privacy: WEP is a key-based IEEE 802.11 data encryption protocol designed to provide a wireless LAN with protection against data eavesdropping. The technology has been defeated by hackers and is considered insufficient for enterprise security needs. A stronger 802.11e specification is still under development.

LINKS:

***www.nwfusion.com/primers/wlan/wlanscript.html*:** If you're new to wireless technology, this Web page includes a good primer.

***www.isaac.cs.berkeley.edu/isaac/wep-faq.html*:** Read this informative analysis to better understand WEP's weaknesses.

***www.cisco.com/warp/public/44/jump/wireless.shtml*:** Visit this page for detailed information on Cisco's Aironet products.

***www.cisco.com/warp/public/784/packet/jul01/p74-cover.html*:** This story, "Securing the Wireless LAN," published in Cisco's *Packet* magazine, describes the Aironet architecture and its security features.

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at *mathias_thurman@yahoo.com*, or join the discussion in our forum.

QuickLink: a1590

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Consulting comp. in Little Rock, AR., req. Prog. Analyst w/BS deg. & 2 yrs. exp. or its equivalent. Equivl. is based on educ. & exp. evaluation.

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Multiple openings. E-Commerce Presentation Developer. San Francisco, CA. Resp. for design, doc. & dev. ".com" properties for site-specific, non-enterprise wide solutions. Create Internet/ Intranet architectural framework for E-commerce. Dev., modif. & imple. complex info. systems for various projects. Top-level technical contributor in one or more highly specialized phases of applications development and provide tech consulting on projects. May instruct, direct work of programming pers. and train less exp. analysts. Req.: BS in Computer Science or Mathematics. Working knowledge through academic coursework or experience) of Unix, C++, Java Script, JAVA, XML and XSL. In lieu of bachelor's degree will accept equivalent progressive work experience. Resume: Lori Hubbard, Federated Systems Group, 5985 State Bridge Rd, Duluth, GA 30096.

Java Developer. Wachovia Corp. Charlotte, NC. Interpret functional specs & translates them into appl. designs, logical flows & class models. Dvlp. appl. in Java, using XML & XSL, w/Visual Age for Java dvlp. envir. Reqs. BA in Comp. Science & 1 yr exp. in pos. off. or as a Software Engineer. The 1 yr reqd exp. must incl. work w/ translating designs into appl. code, unit testing, integration testing, prog. on HP & Sun Unix platforms in C++, Java, Javascript & HTML & DB2 database & performing test queries to dvlp. test data. 40hrs/wk, $47K-$80K, Send resume & cvr. ltr. to Randy Buck, 1525 West. W. T. Harris Blvd., NC 0775, Charlotte, NC 28288-0775. No phone calls please.

ForestExpress, LLC, the leading business-to-business marketplace for buying and selling forest products, currently seeks applicants for the following positions in its Atlanta, GA corporate offices: Senior Architect: bachelor's in engineering, computer science, math or related field plus seven years of hands-on application and structured system design/ system integration experience including two years experience with distributed computing protocols DCOM, CORBA and XML. Client Delivery Manager: bachelor's in computer science or engineering plus five years of relevant experience to include at least two years of ERP software project management. For consideration, please forward your resume, along with a statement indicating the position you are applying for, to: ForestExpress, LLC, attention: Human Resources, 500 Northridge Road, Ste. 400, Atlanta, GA 30350. No phone calls please. EOE.

Siebel Application Programmer/ Configurator: Analyze, design, implement, monitor, support, and document the functional software modules within the Siebel eBusiness application system. Participate as a member of the Siebel Center of Excellence team in analyzing users' needs and requirements, and translate detailed specifications into Siebel configuration solutions. Supports concurrent Siebel project teams. Requires 24-hr/ 7-day phone-available support coverage. Seven (7) years relevant experience in systems analysis and programming of business systems, at least two years specifically involving Siebel programming for direct-to-consumer business production support. Experience with Siebel's Mobile Clients & Synchronization, and Consumer Goods Sales; UNIX shell scripting; Oracle Rel. 8 or higher. Salary Range: $93,000 - $100,500 per year, together with medical, dental, life and disability insurances, two weeks paid vacation, 401(k) and employee pension plans. Send résumé to D. Neville, Bose Corporation, MS 5D2, The Mountain, Framingham, MA 01701 daphne_neville@bose.com. Reference job # 1122HS. Visit www.bose.com An equal opportunity employer.

Management Analyst. 8a-5p. 40 hrs/wk. Conduct organizational studies; eval data, systm & procedures; dvlp & implmt prgm to streamline operations; provide logistics report using Visio, Rational Rose, Lotus Domino R5, Java, Java Security, J2EE, EJB, CORBA, VC++, VB Script, Oracle, SQL, & AS/400. Reqs. Bach or equiv in Bus Admin, Economics, Acctg, Info Systms, Comp Sci/Engg. 2 yrs exp in job offrd or as Systms/Prgmr Analyst. Resume to: GTS, Inc., 3761 Venture Dr., Bldg 100, Ste# 240, Duluth, GA 30096.

iQuantic Buck Consultants seeks Software Engineer with software development experience in HTML applications to work out of our San Francisco office. Send resume to Buck Consultants, Inc., 500 Plaza Dr., Secaucus, NJ 07096 or on-line at resumes-JXP@buckconsultants.com, refer to Software Engineer - JH.

Responsible for coding, designing and re-engineering Web applications for clients. Write applications using C++, Rational Rose, UML and object oriented analysis and design. Responsible for dealing with the business partners in gathering the requirements and creating specifications. Must have a Bachelor's degree in CS or foreign degree equivalent. Must have 1 yrs of exp. in job offered. Salary Competitive: send resume to: Raj Shekaran Software Research Assoc. 70 Mansell Ct. Ste. 100 Roswell, GA 30076.

Ld. Programmer/Analyst, wanted by recruitment org. in Melville, NY. Reqd BE or equiv + 3 yrs exp incl Oracle, SQL, SQR & exp w/PeopleSoft. Fax resume to M. Storelli at (631) 844-7426.

Oracle Applications DBA. Install & adm. Oracle Apps S/W inc. d/base & implement backup strategies. Install & maintain Veritas Netbackup Datacenter. Write PL/SQL progs. & shell scripts. Req: Bachelors in Elect. Eng., Comp. Eng. or Comp. Sci. 40-hr.wk. Job/Interview Site: Orlando, FL. Send resume to Virtual Consulting Services, Inc., 2013 Tizewell Cir. #1417, Orlando FL 32837

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Design, develop, test and implement software using Java, J2EE, Weblogic/Websphere, Distributed Technologies, Rational Rose, UML, Oracle, and SQL Server on Windows NT/2000, UNIX. Prevailing wage/benefits. Send resume to HR, Radiumsoft, 4470 Chamblee Dunwoody Rd., Suite 200, Atlanta, GA 30338. EOE.

SOFTWARE ENGINEER wanted by toys online co. in Houston, TX. Must have M.S. degree & exp. Respond by resume only to: Mr. P. Gulla, V.P. I'nx Corp., 6201 BonHomme, Ste 168-F, Houston, TX 77036.

IT Developer 3 – Boston, MA, Evergreen Investments. Interpret bus. reqs. & recommend tech. alternatives, solutions, tools, & platforms. Reqs. BA in Comp. Science, Eng. or rel. disc. & 3 yrs exp. The 3 yrs exp. must incl. work w/ new appl. dvlp., object-oriented analysis, design, coding & testing, & Java & middleware tech., XML & web servers. The 3 yrs exp. must also incl. dvlp. & deploying appl. on Microsoft & Sun platforms. 40hrs/wk, 8-5, $78K-$98K, Send resume & cvr. ltr. to Luzanna Korshuk, 200 Berkeley Street, Boston, MA 02116. No phone calls.

Database Administrator (Pharma/ Finance) wanted by New Jersey based Co involved in Quantitative Marketing Analysis for Pharmaceutical Industry. Must have Masters in Comp. Sc., MBA (MIS/Finance) or equivalent, and 2 years of experience in computer software developing and/ or consulting. Must also be proficient in Oracle, RDBMS managing tuning data and understanding financial concepts. Must also have Oracle certification. Respond to: HR Dept., Health Products Research, Inc., 3498 Route 22 West, P. O. Box 500, Whitehouse, NJ 08888-0500. Fax: (908) 534-9472, e-mail: careers@HPRmail.com. (Ref: GG8206IM).

Programmer Analysts needed: Analyze software requirements; Research, design and develop computer software. Work with 3 of the following: Visual Basic, Java, C, UNIX, DB2, DBA and Data Modeler. Requires BS degree or equivalent and/or relevant work experience. Mail resume, transcripts, references and salary requirements to: NewGen Technologies, Inc., 1300 S. Farm View Drive #D36, Dover, DE 19904.

Application Design Architect wanted by Financial Services Firm in Purchase, NY to perform database design, architectural & modeling functions. Must have Bachelor's degree in Comp Sci, Math, Elec Engg or Finance & 5yrs s/ware exp. Respond to: HR Dept, Independent Financial Marketing Group, Inc., 100 Manhattanville Rd, Purchase, NY 10577; via e-mail: hr@ifmg.com, or via fax: 914-641-4770.

Computer s/ware co. in Iselin, NJ seeks Programmr/Systems Analysts/Softwre Engrs. All positions req Bach degree in Comp Sci/Comp Eng/Math or reltd field & 1-3 yrs exp. Send resume to: FTI, 194 Wood Ave South, 6th fl, Iselin, NJ 08830 or to: recruit@ftisoft.com. Heading: P/SA/SE.

Programmer/Analyst (Jacksonville, FL): Analyze, design, develop, implement & maintain Oracle Developer 2000 Forms/Reports 6i, PL/SQL, UNIX, Shell scripts, OLAP, DSS, ETL Tools, EDI Interface, Oracle Query Optimization strategies and Database Design. Req. B.Sc. or its foreign degree equivalent in C.Sc., E. Engg. or other related engineering field + 2 yrs exp. in job offered. Resume to: HR Manager, SoftTech, Inc., 6025 The Corners Pkwy, Suite 204, Norcross, GA 30092

Network Administrator: Design, develop, deploy and maintain TCP/IP Networks using Windows NT, CheckPoint Firewall, Windows NT domain with PDC, BDC, and services such as DNS, WINS, etc. Perform configuration & administration of Cisco Routers. Manage internal network. Req: Bachelor of Sci. in Comp. Sci., Eng., or Related (or U.S. equiv.) & 2 yrs. exp. Mail resume to: DCT Systems Group, 3100 Medlock Bridge Rd., Norcross, GA 30071.

Software Programmer wanted by New Jersey based Co for job locations throughout the US. Must have Bachelors in Comp. Sc., Engg. 3 years of experience in computer software development and/or consulting and proficiency in Oracle, JAVA, HTML, Weblogic, JDBC drives, EJB/ JSP. Respond to: HR Dept., eComServer, Inc., 116-200 Village Boulevard, Princeton, NJ 08540. (Ref: GG8228IM).

Sr. Software Consultant for NJ based Co for client locations in the USA. Must have Master's degree in Comp. Sc., Engg., six years of experience in Comp. S/W developing and/or consulting and proficiency in J2EE, EJB, CORBA, ATG Dynamo, Web Logic. Respond to: HR Dept., Y-Point, Inc., 1 Bethany Road, Suite 62, Building 5, Hazlet, NJ 07730. (Ref: GG8146IM).

Programmer-Analyst (F/T). New York, NY. Analyze user requirements, design, develop and implement network management software using C++, Java, Sybase, and Unix/windows 2000. BS in Computer Engineering/Computer Science with one year related experience. Send resume to HR., Mercury & Mien, 33 West 17th St., NY, NY 10011

Systems Engineer for leading provider of customized, value-added logistics solutions to develop and maintain computer systems utilizing various database servers and applications. Min req. Bach. in Computer Science plus 2 yrs. exp. in RPG ILE/IV/400. Send resumes to TNT Logistics North America, 10407 Centurion Parkway North, Suite 400 Jacksonville, FL 32256. Ref 808YL.

Programmer/Analyst for leading provider of customized, value-added logistics solutions to design, install and document new programs and modifications to existing programs. Min req. Bach. in Computer Science plus 2 yrs. exp. or 4 yrs. professional exp. Send resumes to TNT Logistics North America, 10407 Centurion Parkway North, Suite 400 Jacksonville, FL 32256. REF-CT 201.

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Software Engineer for Houston co. involved in developing engineering software and services for energy transmission companies and distribution utilities to research, design and develop computer software systems for simulation and modeling applications. Must have strong knowledge, and working experience with ef-CORBA, DCOM, ROP methods, OOAD and OOP. Bach. in Software, Electronics or Communications Engineering and 2 yrs. experience. Send resumes to Angie.McPherson@AdvanticaStoner.com.

System Administrators needed: Perform analysis tuning; Implement and plan recovery operations. Work with 3 of the following: SUN E10k, EMC Symmetrix, SAN, EMC SRDF, Net Apps F840 Filers, SUN Cluster. Requires MS/BS degree or equiv. and/or rel. work exp. Mail resume, trans., ref. and salary req. to: Net Effects, Attn: Michelle Zipiel, 500 Chesterfield Center, #350, Chesterfield, MO, 63017.

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Sifa Infotech Inc., has multiple openings for Programmer/Analyst, Software Engineer, Project Leader/ Manager, Technical Recruiter/ Writer& IT Accounts Manager. Please send a detailed resume with salary history and requirements to: 9572 Topanga Canyon Blvd., Chatsworth, CA 91311 or via email to: infotech@sifa.com

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2 Openings for a PC/Database Technical Support Specialist. Must have Bachelor's degree in Business Administration/ Computer Science/Computer Management and one year experience. Will provide support on desktop applications and evaluate user needs and requirements. Send resume to: HR Dept. M.E.I. Computer Services, 18 North Wolf Road, Northlake, IL 60164.

Multiple openings. Sr. E-Commerce Presentation Developer, San Francisco, CA. Dsgn, doc & dev ".com" properties for site specific solutions. Provide tech consulting. Prep estimates for new projects, enhancements & maintenance. Recommend systm solutions to customers. Code & implmt advanced well-dsgnd, efficient prgms in conformity to Co. standards & methodology. Resp for dev Product display, Customer Care & personalization modules on web site. Dev Change Mgt. Sys. using Rational Clearquest & SQL Server to organize dvlpmt envrmt. Utilize Envrmt/Tools JDK 1.2, JDBC 1.2, Java Servlets, JSP, XML, IBM WebSphere, DB2, Win NT 4.0, IBM AIX. Req: MS deg (or frgn eqv) in Comp Sci Engg or closely rel field. 3 yrs exp in job offd or in S/ware Analysis. In lieu of MS deg & 3 yrs exp, will accept BS in one of stated fields & 5 yrs progressive exp in job offd or s/ware analysis. 2 yrs exp (which may have been obtained concurrently) w/Oracle, Java Servlets, Java Script & PowerBuilder. Resume: Lori Hubbard, Federated Systems Group, 5985 State Bridge Rd, Duluth, GA 30096.

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Senior Systems Engineer to research, develop and design computer software systems for statistical analysis and large data warehouses using scientific principles and mathematical models. Bach. and exper. required. Competitive salary.
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Perform System Adm. functions in mixed UNIX env. Incl. Hewlett Packard, SUN, & Stratus to maintain operational readiness of mult. sys. Install & support UNIX, to include installation/ updating of current software versions & patch loading. Identify, plan, & assist w/inst. of software, hardware, & firmware upgrades of sys. Assist other System Adm. w/continued integration of UNIX B.S. in EE, CS or rel. & 2 yrs. exp. in above pos. or 2yrs. exp. as UNIX System Adm., or rel. w/HP-UX, Solaris, or Stratus O/S; exp. in cust. support functions for a large-scale env.; & exp. w/Vmark's Universe database appl. Lang. & Ingres &/or Oracle. 40.0 hr/wk. 8-5. Send resume to: Paul W. Ruth, Director, Cobb County Information Services Dept, 100 Cherokee St., Ste. 520, Marietta, GA 30090

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A Chicago are computer company is looking for a Programmer Engineer to design, write, upgrade and customize specialized software for individual clients and their specific business needs, especially dry-cleaning business, and to provide troubleshooting and technical support to clients. 40 hrs/wk, 9am-5pm, $51,000/yr. B.S. in Computer Science required. Mini. 1 yr related experience. Applicant must show proof of legal authority to work in the U.S.
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At 195 West Street, Waltham, MA office:
Programmer/Analyst: Requires Bachelor's or equiv in CS, Engineering, Math, or related field plus 2 yrs exp in a computer-related position uing Oracle and Java.

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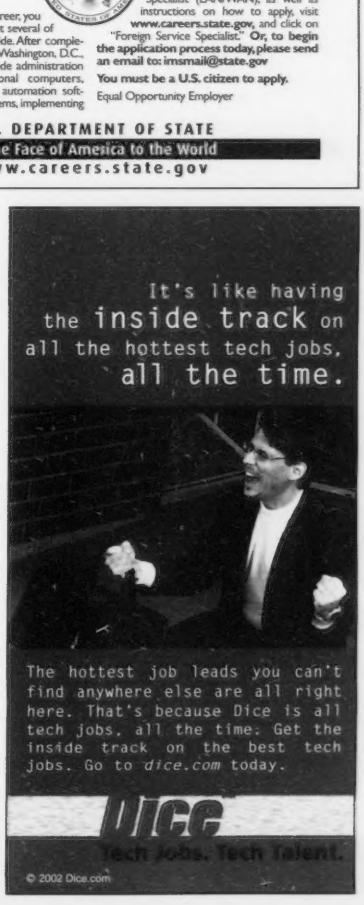

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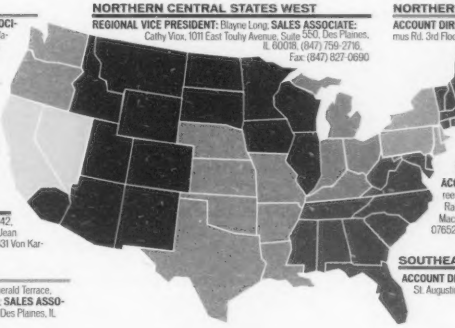

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Oracle

release in the foreseeable future, OAUG members were critical of the rapid pace of Oracle's incremental 11i upgrades.

The new releases require extensive testing and sometimes cause glitches in existing systems, according to some conference attendees. Every release of the 11i software "breaks the old stuff," said Melanie Bock, a San Francisco-based Oracle consultant who is a past president of the OAUG.

Several users also faulted Oracle's support. They said support workers don't seem to be communicating with Oracle's developers and often aren't fully up to speed on 11i's nuances. The amount of software patches that users have to install and the time it can take to put them in place were also sore points for some users.

Elaine Friedman, a technical analyst at Canada's National Capital Commission, said that the Ottawa-based, quasi-public agency charged with capital maintenance and beautification halted an 11i implementation last fall because the patching process was so slow.

Some problems took weeks to fix, Friedman said. She added that the commission postponed its migration from Oracle's 10.7 financial applications until this fall.

Cliff Godwin, senior vice president of applications technology at Oracle, said software quality improvements made by the company over the past year have cut in half the number of patches that new 11i users typically need to install. In response to user demands, he added, Oracle also now offers packs that include multiple patches in order to further reduce installation work.

Oracle's remedy plan also includes the formation of a new group to monitor internal quality assurance procedures and the start of weekly meetings between developers and support workers. In addition, a new utility being built into 11i is supposed to notify users of patches they need to install.

Brussels-based DHL Worldwide Network NV in January completed a global migration to 11i from 10.7. Like other early adopters of 11i, the delivery company faced "a lot of issues with quality" and was kept busy testing patches that Oracle released to fix glitches, said Jeremy Young, finance business process manager at DHL.

Oracle appears to be moving in the right direction now, noted Young, who is another past president of the OAUG. "The signs are there, but you want to see it continue," he said.

All the Fixings

The steps Oracle is taking include the following:

EXTERNAL

- An 11i upgrade due next month includes utilities that can detect patches a user needs to install.
- A new template will automate the process of configuring 11i to handle business processes.
- Another utility is aimed at helping users plan the steps they need to take during upgrades.

INTERNAL

- 11i developers are using new automated code generation and software testing tools.
- Developers and technical support workers are meeting weekly to examine trends and issues.

Users Unhappy With 11i Upgrades

Underscoring the application upgrade and support issues raised by users at the OAUG conference was the release of survey results by Boston-based AMR Research Inc. showing a low level of satisfaction with the 11i implementation process.

The survey, conducted in February, drew responses from 115 OAUG members whose companies have completed 11i rollouts. Jennifer Kemmeter, an AMR analyst, wouldn't disclose the percentage of the respondents who said they were satisfied with the upgrade process. But she said the figure was "very low."

Moreover, Kemmeter said, the users that took part reported that they spent an average of 43% more money and 39% more time on 11i implementations than they had expected. On the other hand, she noted that 60% of the users said they were satisfied or better with Oracle as a company. And 75% said 11i had improved their software environment and delivered business benefits.

Oracle declined to comment about the survey. But a source at the company said it's working to help users keep their 11i upgrades from going over budget and taking more time than scheduled. For example, Oracle is automating the software regression testing process.

– Marc L. Songini

Continued from page 1

Privacy

other than what's available on the Marriott Rewards Web site, he must pay the company's special $20 privacy-policy charge for a personal data request. The company's U.S. privacy policy doesn't include this access provision.

That fee doesn't cover the cost of providing the data, said Stephanie Hampton, a spokeswoman for the Bethesda, Md.-based hotel chain. Assembling the information may require the help of a systems analyst, and "you can easily assume that $20 is a lot less than what they make an hour," she said.

And while the privacy bill approved earlier this month by the U.S. Senate Committee on Commerce, Science and Transportation gives broad access rights to citizens here, it would let companies charge a maximum of only $3 per request. The bill has been sent to the Senate for a vote.

Opponents say access could be costly for companies. A study for a technology trade group last year by Robert Hahn, director of the American Enterprise Institute-Brookings Joint Center for Regulatory Studies, estimated privacy compliance, including access, at $9 billion to $36 billion.

But privacy advocates have discounted that figure and also point to studies showing that privacy fears are costing retailers billions in customer spending. Another problem is defining what is meant by "access" to personally identifiable data. A U.S. Federal Trade Commission special committee's report from 2000 raised many questions without providing clear answers.

For instance, does personally identifiable information include clickstream data, data purchased by or from third parties, and inferred as well as factual data — information developed about a customer from data that has been collected?

The Senate bill was authored by Sen. Ernest "Fritz" Hollings (D-S.C.). If it becomes law, the FTC would have to enforce it and answer those questions.

Staples Inc., a Framingham, Mass.-based office retailer, has 175 of its 1,400 stores located in Europe, and the company is complying with European rules, as Marriott is, under the a "safe harbor" accord between the U.S. and the European Union.

Companies that sign up under the agreement with European authorities post privacy policies that are modeled after Europe's privacy laws.

Staples gives its European and U.S. customers access to personally identifiable data. The data is available online, but if a customer seeks additional information, they must contact Staples to discuss their request, said Kristin Campbell, a senior vice president at the firm and assistant general counsel.

"Some of the [safe harbor] guidelines are rather fluid," she said. "The requirement is that the data provider has to have access, but it doesn't tell us exactly what that means."

One country with a lot of experience on this issue is New Zealand. Its data protection law is about 10 years old, and of the 7,000 complaints it has received, about 40% deal with access issues.

But complaints against multinational companies are few, said Bruce Slane, New Zealand's privacy commissioner. "We think generally that large multinational companies are better managed and want to have fair information practices," he said.

Access Rules

EUROPE Customers have broad rights to see personally identifiable information and make corrections.

U.S. Customers have rights to certain kinds of data, such as credit reports, but not to everything collected by firms.

PROBLEMS Without a centralized database, complying with an access request can be difficult.

REALITY European authorities aren't enforcing their privacy laws – yet. U.S. may see privacy bill with access requirement, but passage this year is doubtful.

ON ANOTHER FRONT

An international body is revising its information security guidelines.

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FRANK HAYES/FRANKLY SPEAKING

The Cost of Speed

DIDJA SEE the story on the front page of last Monday's *USA Today*? The one with the headline "Companies Squander Billions on Tech"? The one that says U.S. companies "threw away" $130 billion in the past two years on unneeded software and systems, suggests that Y2k spending was a boondoggle and implies that everyone else involved in corporate IT decisions, from CEOs down to the propeller heads in the trenches, are dimwitted dopes who never get anything right when it comes to technology?

Right — as mama used to say, it makes a good story. But is it true?

It surely sounds damning. The story talks about a "spending spree," and "panic buying" for Y2k, and companies "burned by overspending." And if $130 billion really was wasted over two years, that's about 15% of U.S. corporate IT spending down a rathole — and the story claims that, worldwide, IT "waste" is more like 20%.

Is it true? If it is, we could reasonably expect every CIO to be on the street right now, and deservedly so. Why, just by cutting out that IT waste, we could probably put this recession behind us, and put a million unemployed people back to work right now!

But it's baloney. Sliced thick and served up with all the trimmings, but baloney all the same.

There *is* no massive waste, no tens of billions of IT dollars squandered or thrown away. We know where the money went. So do our CEOs. It went to Web stores and e-commerce, to Y2k and B2B, to enterprise applications and productivity-enhancing systems. Did we spend more than absolutely necessary? Sure — everybody's hindsight is crystal-clear. If we'd had years to create an e-commerce infrastructure, we could have fine-tuned every decision and optimized everything for price.

But we didn't have years. We had months. So we had to make best guesses, leave margins for error and work a little faster. We built in more capacity than absolutely needed because if we didn't, we'd catch holy hell when the system couldn't handle the load. We bought products with features we didn't need because those products were available and we couldn't afford to wait.

There's your "unneeded" IT spending. We optimized for delivery speed, not cost, because otherwise, we'd have been demolished in the electronic marketplace.

Sure, big IT projects failed at Hershey, Kmart, Nike and other companies. (*USA Today* counts those in its "wasted" billions.) We've always seen some projects fail, along with some companies that lacked clear IT visions. The difference now is that far more IT projects have direct importance to the business — so business-side people demand much faster delivery, resulting in much greater risks and a more direct hit to the bottom line when a project fails.

Of course, *USA Today* also counts the most successful collection of IT projects in history as wasted spending. Here's the paper's version of Y2k: "Little happened, except that corporations got stuck with big tech bills." Of course, making sure "little happened" was exactly what IT people were supposed to do. And we'd have spent a lot less on Y2k if we had approval to start work sooner and didn't have to sprint at the end.

It's all about speed. IT is ever more critical to the business, and business changes ever more rapidly, so we've got to deliver the IT goods ever more quickly. But the price of that speed is that IT costs more — and comes with greater risks.

That's the real story — the one *USA Today* missed.

So if your CEO asks why you're "wasting" so much money on IT, point out that business needs create short deadlines, that capacity and time-to-market are where the money goes, and that the choice to optimize for cost or for the business's need for speed is up to him.

And remind him that IT can come fast, or good, or cheap — but never all three at once. ◗

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at **frank_hayes@computerworld.com.**

SHARK TANK

HELP DESK pilot fish is troubleshooting a user's floppy disk drive that makes a clicking sound and won't read any disks. Mystery is solved when fish spots a floppy that's missing its metal sleeve. Is that the one you were using? fish asks. "Yes," user says. "And now it won't work anywhere else either."

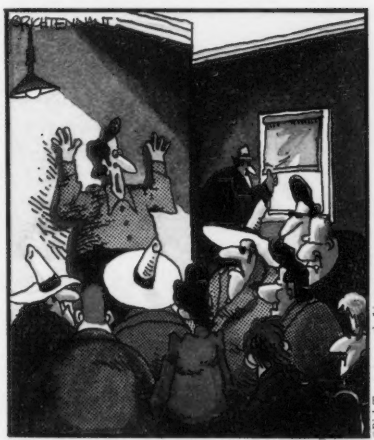
USER restoring a backup from seven floppies can't get past Disk 6. When he puts in the final floppy, the program keeps flashing "Insert Disk 7." A quick check by IT pilot fish reveals that last disk is No. 8. Where's Disk 7? fish asks user. "Well, usually it only wants seven disks, but last night it wanted another disk," user explains. "I didn't have one, so I just left the last disk in and let it keep running. It seemed to finish OK, though."

IT DIRECTOR'S laptop won't let her save changes to her important presentation to a floppy disk. She goes from PC to PC in the department and quickly concludes that *all* the floppy drives in the IT shop are bad. Furious, she calls hardware support pilot fish on the carpet. Fish examines the floppy – and solves the problem by sliding the write-enabled tab closed.

PANICKY secretary turns up at support pilot fish's door clutching a damaged floppy disk. It can't be read, and the document is too long to retype, and it *must* go out that afternoon, she wails. Fish rescues the file, then asks what happened. "The boss asked for yet another change," she admits. "And out of frustration, I drop-kicked the floppy across the room."

Kick a story my way: **sharky@computerworld.com.** You score a sharp Shark shirt if we use your true tale of IT life. And check out the daily feed, browse the Sharkives and sign up for Shark Tank home delivery at *computerworld.com/sharky.*

The 5th Wave



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"Okay people, remember – use your project management software. It's customizable, so those of you collecting 'juice' will use a slightly different entry from those of you doing shakedowns or fencing stolen goods."

@server

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